



THE HISTORY OF THE

CHURCH OF ENGLAND

IN THE

REIGN OF KING CHARLES THE FIRST

VOLUME THE FIRST

OF THE

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Foot 562

Foot 563.

BRITISH ZOOLOGY.

Class III. R E P T I L E S.

IV. F I S H.

*At ego despectis quæ census opesque dederunt
Naturæ mirabor opus.* AUSAONIUS.

V O L. III.

CHESTER,
PRINTED BY ELIZ. ADAMS,
FOR BENJAMIN WHITE, AT HORACE'S HEAD,
FLEET-STREET, LONDON.
MDCCLXIX.

BRITISH ZOOLOGY

CENSUS III. R. E. P. T. I. L. E. S.

It is our justice, my dear Tom to
state to you a work which is
with your approbation carried on
and improved. I have
been enabled to during the many years
that we have passed together.

I have found that I own the
work which is now
presented to the public
and trust you will be
pleased to see it
and I am sure it will
be found to be
of great service
to the cause.

PRINTED BY ELIZ. ADAMS.
FOR BENJAMIN WHITE, AT ROYAL HEAD,
THE STRAITS, LONDON.
MDCCLXIX.

T O

THOMAS FALCONER, Esq;

O F

C H E S T E R.

IT is but justice, my dear Tom, to address to you a work which was begun with your approbation, carried on under your improving strictures, and has so often amused us during the many pleasing hours we have passed together.

At the same time that I own the many advantages I have reaped from making you confident to the productions of an idle and rural pen ; let me not fail in my acknowledgements to our common friend the Hon. DAINES BARRINGTON, who, with unremitting ardor, and with an honest freedom, has favored me with the most instructive hints on the subject of the following sheets.

Would ! would to Heaven that I was capable of adding the third to the number ! But the grateful tribute of a

sigh is all I can give to what is now become only an instructive memory. Simplicity of manners, zealous friendship, the promotion of all liberal arts, universal benevolence, with its amiable attendant charity, characterised the Prelate whose loss I deplore. You I know will excuse these expressions of sensibility, when you recollect it is Dr. LITTLETON, late Bishop of CARLISLE, whom I lament.

May you live long and happy, is the earnest wish of him, who is, with the truest regard,

Your most affectionate kinsman,

And faithful humble servant,

Downing,
March 25, 1769.

Thomas Pennant.

E R R A T A.

Page 21, <i>dele</i> **, and ** xxix. c. 3.	
22, Attingot,	Attingat.
51, gives	give.
56, those (<i>the first</i>)	these.
65, <i>ἡζουσι</i> ,	<i>ἡδουσι</i> .
66, instrument,	instruments.
67, NAPKE,	NAPKH.
68, impute,	impart.
69, least	left.
83, assunder,	asunder.
90, are,	is.
94, Note, second of	second book of.
115, assure,	assures.
135, twelve,	fix.
140, extirminate,	exterminate.
171, Gunnellis,	Gunnellus.
173, fins,	fin.
213, <i>le Soup</i> ,	<i>le Loup</i> .
251, interceptor,	intercepte.
236, abound,	abounds.
298, Note, on,	on.
<i>moutant</i> ,	<i>montant</i> .
306, <i>norit</i> ,	to be placed under <i>Quis</i> ?
310, **	to be placed, p. 309, over
without beards,	BREAM.
315 <i>venera</i> ,	<i>venena</i> .

A D V E R T I S E M E N T.

I N D I A N Z O O L O G Y.

P A R T I.

Consisting of Twelve Plates, 4to. Imperial, with Descriptions.

THIS Work will be continued and completed in Six Numbers, containing Figures of undescribed Birds and Quadrupeds, with some Essays on the *Indian* Animals mentioned by the Antients, obscured by Fable, &c.

Sold by Mr. WHITE, Bookseller, in *Fleet-street*, and Mr. WALTERS, at *Charing-Cross*.

E. R. A. T. A.

For the purpose of this work, the following definitions are given:

1. A

2. B

3. C

4. D

5. E

6. F

7. G

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296. J

297. K

298. L

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301. O

302. P

303. Q

304. R

305. S

306. T

307. U

308. V

309. W

310. X

311. Y

312. Z

C L A S S III.

R E P T I L E S.

All the works of the LORD are good, and he will
give every needful thing in due season.

So that a man cannot say this is worse than that,
for in time they shall all be well approved.

Ecclesiasticus xxxix. 33, 34.

C L A S S I C

R E P U T A T I O N

All the works of the Lord are good, and he will
give every needful thing in due season.
So that a man cannot say this is worse than that,
for in time they shall all be well approved.
Ecclesiastes xxi. 33. 34.

R E P T I L E S.

WE are now to consider the class of reptiles, which are, for the most part, objects of detestation; but however the opinion of the world may be, if a writer undertakes a general history of animals, he must include them: they form at least one link in the chain of beings, and may therefore be viewed with a degree of pleasure by a philosophic eye.

But notwithstanding the prejudice against this class is almost universal, is it founded on reason? In some it may be owned that the outward form is disagreeable, while the noxious qualities of others are justly productive of terror: but are we on that account to reject them? The more fatal they are, the more deeply we should enquire into their effects, that we may be capable of relieving those who are sufferers, and secure others from the same misfortune. But if we duly weigh their noxious qualities, we shall, with our moral poet, find

“ All partial evil universal good.”

The teeth of wild beasts, and of serpents, are not only created as instruments of vengeance, but are salutary in lessening the numbers of those animals which are highly useful in the degree, and only hurtful in their excess; but if their bad qualities are serviceable, we are more indebted to their good ones than we chuse to acknowledge.

* A

But

But many of the animals that form this class are of immediate benefit to mankind. The Turtle, or Sea-Tortoise, supplies the torrid zone with a wholesome and delicious food, as the epicures of our own country can attest. Frogs are a food in several parts, as Lizards and Serpents are in others.

The medicinal virtues of the Viper are partly exploded by the moderns, but time, the overthrower of systems, as well as empires, may restore it to the rank it held with the antients. The *Lacerta Scincus* is, however, yet esteemed in the *East* for its salubrious qualities, and even Toads have contributed to the ease of patients in the most inveterate of all diseases.

Had I followed *Linnæus*, and included the Cartilaginous Fish in this class, there would have been ample room for panegyric, for it is very doubtful whether any are pernicious; but the uses of many, either as food or for mechanical purposes, were never questioned.

But if the external figure of the reptile tribe is disgusting, they have one general beauty, an apt configuration of parts for their way of life, nor are they destitute of their peculiar graces: the fine disposition of plates in the shell of the Tortoise, with the elegant symmetry of their colors, must strike even common observers, while the eye of the despised Toad has a lustre denied to more pleasing forms. The frolicsome agility of Lizards enlivens the dried banks in hot climates, and the great affection which some of them shew to mankind, should farther engage our regard and attention.

The

The wreathing of the Snake, with the vivid die of its skin, are certainly graceful, tho' from the dread of some particular species which are venomous, we have acquired an antipathy for the whole. The ancients, who considered the Serpent as an emblem of health, could associate pleasing ideas with this animal. We therefore find it an ornament at every entertainment, and in every scene of mirth, both in painting and in sculpture. *Virgil* adopted this notion, and has accordingly described it with every beauty both of form and color,

*Adytis cum lubricus anguis ab imis
Septem ingens gyros, septena volumina traxit ;
Amplexus placidè tumulum, lapsusque per aras :
Cæruleæ cui terga notæ, maculosus et auro
Squamam incendebat fulgor ; ceu nubibus arcus
Mille trahit varios adverso sole calores.*

V. 84.

From the deep tomb, with many a shining fold,
An azure serpent rose, in scales that flam'd with gold:
Like heaven's bright bow his varying beauties shone
That draws a thousand colors from the sun:
Pleas'd round the altars and the tomb to wind,
His glittering length of volumes trails behind.

Pitt.

But if after all some lively writer should pursue the Naturalists with more wit than argument, and more humor than good-nature, it should be endured with patience. Ridicule is, however, not the test of truth, tho' when joined to fatyr, it seldom fails

of seducing the many who had rather laugh than think. Should this prove the case in the present instance, let the author be allowed to skreen himself from censure, by saying he writes not to the many, but the few ; to those alone who can examine the parts with a view to the *whole*, and who scorn to despise even the most deformed, or the most minute work of an all-wise CREATOR.

G E N E R A.

I.	Tortoise	1
II.	Frog	3
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BRITISH

BRITISH ZOOLOGY.

Class III.

R E P T I L E S.

Genus I. Body covered either with a shell or strong hide, divided by futures; four fin-like feet; a short tail. TORTOISE.

I. The SPINOUS TORTOISE.

Testudo coriacea sive Mercurii	gulis septem exaratis. Lin.
Rondel. 450? Gesner pisc. 946?	syst. 350.
Testudo coriacea? Testudo pedibus pinniformibus muticis, testa coriacea, cauda an-	Turtle. Borlase Cornwall, 285. Plate 27.

THIS species (if the *testudo coriacea*) seems common to the *Mediterranean*, and to our southern seas, and is not, as far as we know, discovered in any other.

Two were taken on the coast of *Cornwall* in the mackrel nets, of a vast size, a little after *Midsummer* 1756; the largest weighed eight hundred pounds, the lesser near seven hundred.

Doctor *Borlase* first published these animals to the world, and discovered them in our seas.

He describes them as having seven spiny or serrated ridges running from the head to the tail, dividing the upper part of the back into equal parts.

The fore legs, as appear by his figure, are remarkably long and narrow, flat, smooth, and fleshy, being destitute of scales. The color of their upper side bluish, their under side, as well as that of the neck, ruddy, speckled with black.

We suspect an error in the number of the hind legs, the figure being represented with four, an excess we never have met with in any of this genus.

Size.

The head is painted extremely small, in proportion to the size of the animal, whose length was six feet nine inches, and breadth from the tip of one fore leg to that of the other ten feet four inches.

The covering of this species is compared to that of the *Testudo coriacea* of *Rondeletius*, which has an integument resembling a tough strong hide; and what is very singular, neither that of the *Cornish* species, nor yet that of the *French* naturalist, seem by the figures to be divided into angular compartments by transverse sutures, like the shells of all tortoises we have ever met with. But the history of this kind remains still very obscure: it is therefore to be wished, that particular attention be paid to the next that is taken on our coasts; and that observation be made whether the covering is crustaceous or coriaceous, that we may be assured that these were the *European* kind, not the *American*; it seeming not improbable but they might be a couple that had escaped out of some *West India* ship that had foundered, or been cast away near the *Cornish* coast.

Genus

Genus II. Body naked.

Four legs, the feet divided into toes.

No tail.

FROGS.

I. The COMMON FROG.

<i>Batrach.</i> <i>Arist. Hist. an.</i>	Wasser Frosche. <i>Meyer an.</i> I.
<i>lib. iv. c. ix.</i>	<i>tab. 52.</i>
La Grenoille. <i>Belon poissons</i> , 48.	<i>Rana temporaria. R. dorso pla-</i>
<i>Rana fluviorum. Rondel.</i> 217.	<i>niusculo subangulato. Lin.</i>
<i>Rana aquatica innoxia. Gesner</i>	<i>syst.</i> 357.
<i>quad. ovip.</i> 46. <i>Aquatil.</i> 805.	Groda, Fro, Klasse. <i>Faun.</i>
<i>Rana aquatica. Raii syn quad.</i>	<i>suec. No. 102.</i>
447.	<i>Rana. Gronov. Zooph. No. 62.</i>

SO common and well-known an animal requires no description ; but some of its properties are so singular that we cannot pass them unnoticed.

Its spring or power of taking large leaps is remarkably great, and it is the best swimmer of all four-footed animals. Nature hath finely adapted its parts for those ends, the fore members of the body being very lightly made, the hind legs and thighs very long, and furnished with very strong muscles.

While in a tadpole state it is entirely a water-animal ; the work of generation is performed in that element, as may be seen in every pond during spring ; when the female remains oppressed by the male for a number of days.

The work of propagation is extremely singular, it being certain that the frog has not a *penis intrans* ; there appears a strong analogy in this case between a certain class of the vegetable kingdom and those animals ;

Genera-
tion.

animals; for it is well known, that when the female frog deposits its spawn, the male instantaneously impregnates it with what we may call a *farina fecundans*, in the same manner as the male *Palm* tree conveys fructification to the flowers of the female, which would otherwise be barren*.

As soon as the frogs are released from their tadpole state they immediately take to land; and if the weather has been hot, and there fall any refreshing showers, you may see the ground for a considerable space perfectly blackened by Myriads of these animalcules, seeking for some secure lurking places. Some philosophers** not giving themselves time to examine into this phænomenon, imagined them to have been generated in the clouds, and showered on the earth; but had they, like our *Derham*†, but traced them to the next pool, they would have found a better solution of the difficulty.

As frogs adhere closely to the backs of their own species, so we know they will do the same by fish: *Walton*‡ mentions a strange story of their destroying pike; but that they will injure, if not entirely kill carp, is a fact indisputable, from the following relation: a very few years ago on fishing a pond belonging to Mr. *Pit*, of *Encomb*, *Dorsetshire*, great numbers of the carp were found each with a frog mounted on it, the hind legs clinging to the back, the fore legs fixed in the corner of each eye of the fish, which were thin and greatly wasted, teized by car-

* *Shaw's Travels*, 224. *Hasselquist Trav. Engl. Ed.* 416.

** *Rondeletius*, 216. *Wormii Mus.* 327.

† *Ray's Wisdom Great.* 316.

‡ *Complete Angler*, 161.

rying so disagreeable a load. These frogs we imagine to have been males disappointed of a mate.

The croaking of frogs is well known, and from that in fenny countries they are distinguished by ludicrous titles, thus they are stiled *Dutch Nightingales* and *Boston Waites*; even the *Stygian* frogs have not escaped notice, for *Aristophanes* hath gone farther, and formed a chorus of them.

Βρεκεκέξ, κοάξ, κοάξ,
Βρεκεκέξ, κοάξ, κοάξ,
Λιμναῖα κρηνῶν τεχνά *.

Brekekex, coax, coax,
Brekekex, coax, coax,
The offspring of the pools and fountains.

Yet there is a time of year when they become mute, neither croaking nor opening their mouths for a whole month: this happens in the hot season, and that is in many places known to the country people by the name of the *Paddock Moon*.

Periodi-
cal Si-
lence.

*Morton*** endeavours to find a reason for their silence, but tho' his facts are true, he is unfortunate in his philosophy. Frogs are certainly endued (as he well observed) with a power of living a good while under water without respiration, which is owing to their lungs being composed of a series of bladders: but he mistakes the nature of air, when he affirms that they receive a quantity of cool air, and dare not open their mouths for a month, from a dread of admitting a warmer into their lungs. It is hardly necessary to say, that in whatever state the air was received, it

* *Comedy of the Frogs.*

** *Hist. Northampt. 441.*

would assimilate itself to the external atmosphere in a short time. We must leave the fact to be accounted for by farther experiments. But from what we do know, we may partly vindicate *Theophrastus*, and other antients, about the silence of the frogs at *Seriphus*. That philosopher affirms it, but ascribes it to the coldness of the waters in that island: Now when Monsieur *Tournefort* was there, the waters were lukewarm, and the frogs had recovered their voices *. Is it not probable that *Theophrastus* might be at *Seriphus* at that season when the frogs were mute, and having never observed it elsewhere, might conclude their silence to be general as to the time, but particular as to the place. *Ælian* **, who quotes *Theophrastus* for the last passage, ascribes the same silence to the frogs of the lake *Pierus* in *Thessaly*, and about *Cyrene* in *Africa*: but he is so uncertain a writer, that we cannot affirm whether the species of the *African* frogs is the same with ours.

Food.

These, as well as all other reptiles, feed but a small space of the year. The food of this genus is flies, insects, and snails. Toads are said to feed also on bees, and to do great injury to those useful insects.

During winter frogs and toads remain in a torpid state: the last of which will dig into the earth and cover themselves with almost the same agility as the mole.

* *Tournefort's voy.* I. 142.

** *Ælian lib. iii. ch. 35, 37.*

II. The GIBBOUS FROG.

Rana gibbosa. *Gesner pisc.* *R. corpore angulato, dorso*
 809. *transverse gibbo, abdomine*
Rana esculenta. *Lin. syst.* 357. *marginato. Ibid.*
Faun. suec. No. 279.

THIS differs from the former in having a high protuberance in the middle of the back, forming a very sharp angle. Its colors are also more vivid, and its marks more distinct; the ground color being a pale or yellowish green, marked with rows of black spots from the head to the rump.

This and, we think, the former are eaten. We Eatable, have seen in the markets at *Paris* whole hampers full, which the venders were preparing for the table by skinning and cutting off the fore parts, the loins and legs only being kept. Our strong dislike to these reptiles, prevented a close examination into the species.

III. The T O A D.

Βουβων. *Arist. Hist. an. lib.* *Bufo rubetarum.* *Klein quad.*
 ix. c. I. 40. 122.
Bufo. *Virg. Georg.* I. 184. *Ru-* *Rana Bufo.* *R. corpore ven-*
beta. *Plin. lib.* viii. c. 31. *triculo, verrucoso lurido fuf-*
Rubeta sc. Phrynum. *Gesner* *coque. Lin. syst.* 354.
pisc. 807. *Rondel,* 222. *Padda, Tassa. Faun. suec. No.*
Bufo five Rubeta. Raii syn. 275.
quad. 252. *Gronov. Zooph. No.* 64.

THE most deformed and hideous of all animals; the body broad, the back flat, and covered with a pimply dusky hide; the belly large, swagging,

swagging, and swelling out; the legs short, and its pace labored and crawling: its retreat gloomy and filthy: in short, its general appearance is such as to strike one with disgust and horror; yet we have been told by those who have resolution to view it with attention, that its eyes are fine: to this it seems that *Shakespear* alludes, when he makes his *Juliet* remark,

Some say the lark and loathed toad change eyes.

As if they would have been better bestowed on so charming a songster than on this raucous reptile.

But the hideous appearance of the toad is such as to make this one advantageous feature overlooked, and to have rendered it in all ages an object of horror, and the origin of most tremendous inventions. *Ælian** makes its venom so potent, that *Basilisk*-like it conveyed death by its very look and breath; but *Juvenal* is content with making the *Roman* ladies, who were weary of their husbands, form a potion from its entrails**, in order to get rid of the good man.

Occurrit Matrona potens, quæ molle calenum
Porrectura viro miscet sitiente rubetam. *Sat. I. 68.*

To quench the husband's parching thirst, is brought
By the great Dame, a most deceitful draught;
In rich *calenian* wine she does infuse,
(To ease his pains) the toad's envenom'd juice.

This opinion begat others of a more dreadful nature; for in after-times superstition gave it preterna-

* *Hist. an. lib. ix. c. 11.*

** *Sat. vi. 658. Vide Ælian Hist. an. lib. xvii. c. 12 and 15.*
tural

tural powers, and made it a principal ingredient in the incantations of nocturnal hags :

Toad that under the cold stone,
Days and nights, has thirty-one,
Swelter'd venom sleeping got,
Boil thou, *first* i' th' charmed pot.

We know by the poet that this charm was intended for a design of the first consideration, that of raising the dead from their repose, and bringing before the eyes of *Macbeth* a hateful second-sight of the prosperity of *Banquo's* line.

This shews the mighty powers attributed to this animal by the dealers in the magic art ; but the powers our poet indues it with, are far superior to those than *Gesner* ascribes to it : *Shakespear's* witches used it to disturb the dead ; *Gesner's*, only to still the living, *Ut vim coeundi ni fallor, in viris tollerent* *.

We may add here another superstition in respect to this animal : it was believed by some old writers to have a stone in its head, fraught with great virtues medical and magical : it was distinguished by the name of the Reptile, and called the *Toad-Stone*, *Bufo-nites*, *Crapaudine*, *Krottenstein* ** ; but all its fancied powers vanished on the discovery of its being nothing but the fossil tooth of the *sea wolf*, or of some flat-toothed fish, not unfrequent in our island, as well as several other countries ; but we may well excuse this tale, since *Shakespear* has extracted from it a simile of uncommon beauty :

Toad-
stone.

* *Hist. quad. ovip.* 72.

** *Boet. de Boet. de Lap. et Gem.* 301. 303.

Sweet are the uses of adversity,
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in his head.

But these fables have been long exploded: we shall now return to the notion of its being a poisonous animal, and deliver as our opinion, that its excessive deformity, joined to the faculty it has of emitting a juice from its pimples, and a dusky liquid from its hind parts, is the foundation of the report.

That it has any noxious qualities we have been unable to bring proofs in the smallest degree satisfactory, tho' we have heard many strange relations on that point.

Not poisonous.

On the contrary, we know several of our friends who have taken them in their naked hands, and held them long without receiving the least injury: It is also well known that quacks have eaten them, and have besides squeezed their juices into a glass, and drank them with impunity.

We may say also, that these reptiles are a common food to many animals; to *buzzards, owls, Norfolk plovers, ducks, and snakes*, who would not touch them were they in any degree noxious.

So far from having venomous qualities, they have of late been considered as if they had beneficent ones. We wish, for the benefit of mankind, that we could make a favorable report of the many attempts of late to cure the most terrible of diseases the *cancer*, by the application of live toads; but,
alas,

alas, they seem only to have rendered a horrible complaint more loathsome.

In a word, we may consider the toad as an animal that has neither good nor harm in it; that being a defenceless creature, nature has furnished it, instead of arms, with a most disgusting deformity, that strikes into almost every Being capable of annoying it, a strong repugnancy to meddle with so hideous and threatening an appearance.

The time of their propagation is very early in the spring: at that season the females are seen crawling about oppressed by the males, who continue on them for some hours, and adhere so fast as to tear the very skin from the Parts they stick to. We are uncertain whether they are viviparous: *Linnæus** says they are, and diverts us with a report he had heard, that the male acts the midwife to the female in parturition. Genera-
tion.

To conclude this account with the marvellous, this animal is said to have often been found in the midst of solid rocks, and even in the centre of growing trees, imprisoned in a small hollow, to which there was not the least adit or entrance **: how the animal breathed, or how it subsisted (supposing the possibility of its confinement) is past our comprehension. *Plot's*† solution of this phænomenon is far from satisfactory; yet as we have the great *Bacon's*‡ authority for the fact, we do not entirely deny our assent to it.

* *Syst. Nat.* 355.

** *Plot's Hist. Staff.* 247.

† *P.* 249.

‡ *Nat. Hist. Cent. vi. Exp.* 570.

IV. The NATTER JACK.

Rana Rubeta? *Lin. syst.* 355. *R. corpore verrucoso, ano obtuso subtus punctato. Ibid. Faun. suec. No. 101.*

THIS species frequents dry and sandy places: it is found on *Putney Common*, and also near *Revesby Abby, Lincolnshire*, where it is called the *Natter Jack*. It never leaps, neither does it crawl with the slow pace of a toad, but its motion is liker to running. Several are found commonly together, and, like others of this genus, they appear in the evenings.

The upper part of the body is of a dirty yellow, clouded with brown, and covered with porous pimples of unequal sizes: on the back is a yellow line.

The under side of the body is of a paler hue, marked with black spots, which are rather rough.

On the fore feet are four divided toes; on the hind five, a little webbed.

The length of the body is two inches and a quarter; the breadth, one and a quarter: the length of the fore legs one inch one-sixth; of the hind legs, two inches.

We are indebted to *Joseph Banks, esq;* for this account.

BROWN LIZARD . p. 16.



SCALY LIZARD .

*Magell Del. in Sculp.*

Genus III. Slender naked body: four legs:
divided toes on each:

very long tail.

LIZARDS.

I. The SCALY LIZARD.

- | | |
|--|---|
| Lacertus terrestris lutea squa-
mosa anglica. <i>Raii syn. quad.</i>
264. | Odla, Fyrfot. <i>Faun. suec. No.</i>
284. |
| <i>Plot's Hist. Staff.</i> 252. <i>tab.</i> 22. | Lacerta. <i>Gronov. Zooph. No.</i>
60. |
| Lacerta agilis? L. cauda verti-
cillata longiuscula squamis
acutis, collari subtus squamis
constructo. <i>Lin. syst.</i> 363. | Little Brown Lizard. <i>Edw.</i> 225.
Padzher pou. <i>Borlase Corn-</i>
<i>wall,</i> 284. <i>tab.</i> 28. |

THOSE we have seen differ in color, but agree in all other respects with the species described by Doctor *Plot*. Their length from the nose to the hind legs was three inches; from thence to the end of the tail three and three quarters.

Along the back was a black list; each side of that a brown one: then succeeded a narrow stripe, spotted alternately yellow and brown; beneath that a broad black one; those ended a little beyond the hind legs. The belly was yellow, and the scales large but even. The scales on the back small; on the tail the ends projected: those on the latter were varied with black and brown.

The legs and feet were dusky; on each foot were five toes, furnished with claws.

This

This species is extremely nimble : in hot weather it basks on the sides of dry banks, or of old trees ; but on being observed immediately retreats to its hole.

The food of this species, as of all the other *English* lizards, is insects : they themselves of birds of prey. Each of our lizards are perfectly harmless ; yet their form is what strikes one with disgust, and has occasioned great obscurity in their history.

Other
species.

Related to this species is the *Guernsey* lizard, which we are informed has been propagated in *England* from some originally brought from that island. We have also heard of a green lizard frequent near *Farnham*, which probably may be of that kind : but the most uncommon species we ever met with any account of, is that which was killed near *Woscot*, in the parish of *Swinford, Worcestershire*, in 1741, which was two feet six inches long, and four inches in girth. The fore legs were placed eight inches from the head ; the hind legs five inches beyond those : the legs two inches long : the feet divided into four toes, each furnished with a sharp claw. Another was killed at *Penbury*, in the same county. Whether these are not of exotic descent, and whether the breed continues, is what we are at present uninformed of.

II. The WARTY LIZARD.

Lacertus aquaticus.	Gesner	Skrot-abborre, Gruffgrabbe.
quad. ovip. 31.		Faun. suec. No. 281.
Salamandra aquatica.	Raii	Lacerta Americana. Seb. Mus.
syn. quad. 273.		I. tab. 89. fig. 4, 5.
Lacerta palustris. L. cauda lanceolata mediocri, pedibus muticis palmis tetradactylis.		Salamandra alepidota verrucosa. Gronov. Zooph. No. 47.
Lin. syst. 370.		

THE length of this species was six inches and an half, of which the tail was three and a quarter.

The irides yellow: the head and beginning of the back flat, and covered with small pimples or warts, of a dark dusky color; the sides with white ones: the belly, and the side of the tail, was of a bright yellow; the first spotted with black.

The tail was compressed sideways, and very thin towards the upper edge, and slender towards the end.

The fore feet divided into four toes; the hind into five; all without nails, dusky spotted with yellow.

Its pace is slow and crawling.

This species we have frequently seen in the state we describe, but are uncertain whether we ever met with it under the form of a *larve*. We have more than once found under stones and old logs, some very minute young lizards that had much the appearance of this kind: they were perfectly formed, and had not the least vestiges of fins; so that circumstance joined to their being found in a dry place, remote from water, makes us imagine them to have never

never been inhabitants of that element, as it is certain many of our lizards are in their first state.

At that period they have a fin above and below their tail; that on the upper part extends along the back as far as the head, but both drop off as soon as the animal takes to the land, being then no longer of any use.

Besides these circumstances that attend them in form of a *larve*, Mr. *Ellis** has remarked certain pennated fins at the gills of one very common in most of our stagnating waters, and which is frequently observed to take a bait like a fish.

III. The BROWN LIZARD.

Lacertus vulg. terrestris ventre nigro maculato. Raii syn. quad. 264.
L. vulgaris. L. cauda tereti mediocri, pedibus unguicu-

latis, palmis tetradactylis, dorso linea duplici fusca. Lin. syst. 370. Faun. suec. No. 283.

THIS is three inches long: the body slender; the tail long, slightly compressed, small and taper; that and the upper part of the body of a pale brown, marked on each side the back with a narrow black line reaching to the end of the tail: the belly of a pale yellow, marked with small dusky spots; the toes formed like those of the preceding.

* *Phil. Tran. vol. LVI. p. 191.*

IV. The

IV. The LITTLE BROWN LIZARD.

Lacertus parvus terrestris fuscus oppido rarus. Raii syn. quad. 264.

THIS species is mentioned by Mr. Ray in his list of the *English* lizards, without any other description than is comprehended in the *synonym*.

V. The SNAKE-SHAPED LIZARD.

Lacertus terrestris anguiformis in ericetis. Raii syn. quad. 264.

WE remain also in the same obscurity in respect to this species. It seems to be of that kind which connects the serpent and lizard genus, having a long and very slender body, and very small legs. Such are the *Seps* or *Lacerta Chalcidica* of *Raii syn. quad. 272*, the *Lacerta anguina* of *Linnaeus, 371*, or that figured by *Seba, tom. ii. tab. 68.* under the name of *Vermis serpentiformis*.

Genus IV. Long and slender bodies, covered with scaly plates: no feet. SERPENT.

I. The V I P E R.

^aEx¹⁵. *Arist. Hist. an. lib. iii. c. 1.* Coluber Berus. *Lin. syst. 377.*
Vipera. Virg. Georg. iii. 417. Hugg-orm. *Faun. suec. No. 286.*
Plinii, lib. x. c. 42. C. Berus scutis abdom. 146.
Vipera. Gesner Serp. 71. squamis caudæ. 39. *Ibid.*
Viper or Adder. Raii syn. quad. 285. *Amæn. Acad. I. 527.*
Borl. Corn. 282. tab. 28.

VIPERS are found in many parts of this island, but the dry, stony, and, in particular, the chalky countries abound with them.

C

They

They are viviparous, not but that they are hatched from an internal egg; being of that class of animals, of whose generation *Aristotle** says, *Εν αυτοις μὲν ὠοτοκεῖ τό τέλειον ὦόν, ἔξω δὲ ζωοτοκεῖ, i. e.* They conceive a perfect egg within, but bring forth their young alive.

Providence is extremely kind in making this species far from being prolific, we having never heard of more than eleven eggs being found in one viper, and those are as if chained together, and each about the size of a blackbird's egg.

The viper grows seldom to a greater length than two feet; tho' once we saw a female (which is nearly a third larger than the male) which was almost three feet long.

Descr.

The ground-color of this serpent is a dirty yellow; that of the female deeper. Its back is marked the whole length with a series of rhomboid black spots, touching each other at the points; the sides with triangular ones; the belly entirely black.

There is a variety wholly black; but the rhomboid marks are very conspicuous even in this, being of a deeper and more glossy hue than the rest. *Petiver* calls it the *Vipera Anglica Nigricans*. *Pet. Mus. No. 204***.

Teeth.

The head of the viper is inflated, which distinguishes it from the common snake. The tongue forked; the teeth small; the four canine teeth are placed two on each side the upper jaw: these instruments of poison are long, crooked, and

* *De Gen. an. lib. iii. c. 2.*

** *Coluber Prester, Lin. syst. 377. Bose. Faun. suec. No. 287.*
moveable,

moveable, and can be raised and depressed at pleasure; they are hollow from near the point to their base, near which is a gland that secretes, prepares, and lodges the poison; and the same action that gives the wounds, forces from this gland, thro' the tooth, the fatal juice into it.

These islands may be particularly thankful for the blessing they enjoy, in being possessed of only one venomous animal, and that of a kind which encreases so little.

They copulate in *May*, and are supposed to be about three months before they bring forth.

They are said not to arrive at their full growth in less than six or seven years; but that they are capable of engendering at two or three.

We have been often assured by intelligent people of the truth of a fact mentioned by Sir *Thomas Brown**, who was far from a credulous writer, that the young of the viper, when terrified, will run down the throat of the parent, and seek shelter in its belly in the same manner as the young of the *oppossum* retire into the ventral pouch of the old one.

From this some have imagined that the viper is so unnatural as to devour its own young; we disbelieve the fact, it being well known the food of these serpents is frogs, toads, lizards, mice, and, according to Doctor *Mead*, even an animal so large as a mole. These they swallow entire; which if we consider the narrowness of their neck, shews it is capable of a distension hardly credible, had we not ocular proofs of the fact.

* *Vulgar errors*, 114.

It is also said, from good authority, that they will prey on young birds ; whether on such as nestle on the ground, or whether they climb up trees for them as the *Indian* serpents do, we are quite uncertain ; but we are well assured that this discovery is far from a recent one :

*Ut affidens implumibus pullis avis
Serpentium allapsus timet **.

Thus, for its young the anxious bird
The gliding serpent fears.

The viper is capable of supporting very long abstinence, it being known that some have been kept in a box six months without food, yet did not abate of their vivacity. They feed only a small part of the year, but never during their confinement ; for if mice, their favorite diet, should at that time be thrown into their box, tho' they will kill, yet they never will eat them.

The poison decreases in violence in proportion to the length of their confinement : it must be also added the virtues of its flesh (whatsoever they be) are at the same time considerably lessened.

These animals, when at liberty, remain torpid throughout the winter ; yet when confined have never been observed to take their annual repose.

The method of catching them is by putting a cleft stick on or near their head ; after which they are seized by the tail, and put instantly into a bag.

The viper-catchers are very frequently bit by them in the pursuit of their business, yet we very rarely

* *Hor. Epod. I.*

hear of the bite being fatal. The remedy, if applied in time, is very certain, and is nothing else but fallad oil, which the viper-catchers seldom go without. The *axungia viperina*, or the fat of vipers, is also another. Doctor *Mead* suspects the efficacy of this last, and substitutes one of his own in its place*; but we had rather trust to vulgar receipts which perpetual trials have shewn to be infallible.

The symptoms of the venom, if the wound is neglected, are very terrible: it first causes an acute pain in the place affected, attended with a swelling, first red, afterwards livid, which by degrees spreads to the neighbouring parts; great faintness, and a quick tho' low and interrupted pulse ensue; great sickness at the stomach, bilious convulsive vomitings, cold sweats, and sometimes pains about the navel; and in consequence of these death itself**. But the violence of the symptoms depends much on the season of the year, the difference of the climate, the size or rage of the animal, or the depth or situation of the wound.

Effects of
its bite.

Dreadful as the effects of its bite may be, yet its flesh has been long celebrated as a noble medicine. Doctor *Mead* cites from *Pliny*, *Galen*, and other an-
tients, several proofs of its efficacy in the cure of
ulcers, the *elephantiasis*, and other bad complaints. He even says he has seen good effects from it in an
obstinate *lepra*: it is at present used as a restorative,
tho' we think the modern physicians have no great
dependence on its virtues. The antients prescribed

Uses.

* *Essay on Poisons*, 47.

** *Lib. xxix. c. 3.*

it boiled, and to be eaten as fish; for when fresh, the medicine was much more likely to take effect than when dried, and given in form of a powder or troche.

The antient *Britons* had a strange superstition in respect to these animals, and of which there still remains in *Wales* a strong tradition. The account *Pliny* gives of it is as follows: we shall not attempt a translation, it being already done to our hands in a spirited manner by the ingenious Mr. *Mason*, which we shall take the liberty of borrowing.

Præterea est ovorum genus in magna Galliarum fama, omissum Græcis. Angues innumeri æstate convoluti, salivis faucium corporumque spumis artificii complexu glomerantur; anguinum appellatur. Druidæ sibilis id dicunt in sublime jactari, sagoque oportere intercipi, ne tellurem attingot: profugere raptorem equo: serpentes enim insequi, donec arceantur amnis alicujus interventu.*

But tell me yet
From the grot of charms and spells,
Where our matron sister dwells,
Brennus, has thy holy hand
Safely brought the Druid wand,
And the potent *Adder-stone*,
Gender'd 'fore the autumnal moon?
When in undulating twine,
The foaming snakes prolific join;
When they hiss, and when they bear
Their wond'rous egg aloof in air;
Thence before to earth it fall,
The *Druid* in his hallow'd pall,
Receives the prize,
And instant flies,
Follow'd by the envenom'd brood,
'Till he cross the crystal flood**.

* *Lib. xxix. c. 3.*

** *Mason's Caractacus.* The person speaking is a Druid.

This wondrous egg seems to be nothing more than a bead of glass, used by the *Druids* as a charm to impose on the vulgar, whom they taught to believe, that the possessor would be fortunate in all his attempts, and that it would gain him the favor of the great.

Our modern *Druidesses* give much the same account of the *ovum anguinum*, *Glain Neidr*, as the *Welch* call it, or the *Adder-Gem*, as the *Roman* philosopher does, but seem not to have so exalted an opinion of its powers, using it only to assist children in cutting their teeth, or to cure the chin-cough, or to drive away an ague.

We have some of these beads in our cabinet: they are made of glass, and of a very rich blue color; some are plain, others streaked: we say nothing of the figure, as the annexed plate will convey a stronger idea of it than words.

Glain Neidr, or Adder Gems.



II. The S N A K E.

<i>Ενυδρίς. Arist. Hist. an. l. c. 1.</i>	<i>culis distinctus. Pet. Mus.</i>
<i>Natrix torquata. Gesner. Serpent. 63.</i>	<i>xvii. No. 101.</i>
<i>Natrix torquata. Raii syn. quad. 334.</i>	<i>Coluber natrix. Lin. syst. 380.</i>
<i>Anguis vulgaris fuscus collo flavescente, ventre albis maculis distinctus.</i>	<i>Tomt-Orm, Snok, Ring-Orm. Faun. suec. No. 288.</i>
	<i>C. natrix scutis abdom, 170. Squamis caudæ, 60. Ibid.</i>

THE snake is the largest of the *English* serpents, sometimes exceeding four feet in length: the neck is slender; the middle of the body thickest; the back and sides covered with small scales, the belly with oblong, narrow, transverse plates. The first *Linnaeus* distinguishes by the name of *squamæ*, the last he calls *scuta*, and from them forms his genera of serpents.

Those that have both *squamæ* and *scuta* he calls *Colubri*; those that have only *squamæ*, *Angues*. The viper and snake are comprehended in the first genus, the blind-worm under the second; but we chuse (to avoid multiplying our genera) to take in the few serpents we have by a single genus, their marks being too evident to be confounded.

Descr.

The color of the back and sides of the snake are dusky or brown; the middle of the back marked with two rows of small black spots running from head to tail; and from them are multitudes of lines of spots crossing the sides; the plates on the belly are dusky, the scales on the sides of a bluish white.

On each side the neck is a spot of pale yellow, and the base of each is a triangular black spot, one angle of which points towards the tail.

The

The teeth are small and ferrated, lying each side the jaw in two rows.

This species is perfectly inoffensive; it frequents and lodges itself among bushes in moist places, and will readily take the water, swimming very well.

It preys on frogs, insects, worms, and mice, and, considering the smallness of the neck, it is amazing how large an animal it will swallow.

The snake is oviparous: it lays its eggs in dung-hills, and in hot-beds, whose heat, aided by that of the sun, promotes the exclusion of the young. Eggs.

During winter it lies torpid in banks of hedges, and under old trees.

III. The B L I N D - W O R M.

The blind-worm or slow-worm,
Cæcilia Typhline Græcis. *Raii*
syn. quad. 289. *Grew's Mus.*
48.

Cæcilia anglica cinerea squa-
mis parvis mollibus, com-
pactis. *Pet. Mus.* xvii. No. 102.

Long cripple. *Borlase Cornw.*
284. *tab.* 28.

Anguis fragilis. *Lin. syst.* 392.
Ormsla, Koppar-Orm. *Faun.*
suec. 289.

A. fragilis squamis abdominis
caudæque, 135. *Ibid.*

THE usual length of this species is eleven inches: Deseri
the irides are red; the head small; the neck still more slender; from that part the body grows suddenly, and continues of an equal bulk to the tail, which ends quite blunt.

The color of the back is cinereous, marked with very small lines composed of minute black specks; the sides are of a reddish cast; the belly dusky, both marked like the back.

The

The tongue is broad and forky; the teeth minute, but numerous; the scales small.

The motion of this serpent is slow, from which, and from the smallness of the eyes, are derived its names. Like others of the genus, it lies torpid during winter, and are sometimes found in vast numbers twisted together.

Like the former it is quite innocent. Doctor *Borlase* mentions a variety of this serpent with a pointed tail; and adds, that he was informed that a man lost his life by the bite of one in *Oxfordshire*. We are inclined to think that his informant mistook the black or dusky viper for this kind; for excepting the viper, we never could learn that there was any sort of poisonous serpent in these kingdoms.

C L A S S IV.

F I S H.

Ob Deus ampla tuæ, quam sunt miracula dextræ !

O quam solerti singula mente regis !

Divite tu gazâ terras, et messibus imples ;

Nec minus est vasti fertilis unda maris :

Squammiger hunc peragrat populus, prolesque parentum

Stipat, et ingentes turba minuta duces.

JONSTON. PSALMUS CIV.

C L A S S I V

F I S H

Go Down sample that from your microscope
O from below & from above
B R I A T H I N G O r g a n s c o n s i s t i n g o f
usually placed on each side the neck in
instances beneath, in some above and in some
even in number on both sides of the
fish, which has only one. The
The muscles supported by cartilages
bones.

Explain. R. A. the Picked I. of the
The lateral operculum

F I S H.

Div. I. CETACEOUS FISH.

NO gills, an orifice on the top of the head, thro' which they breathe, and eject water; a flat or horizontal tail; exemplified in the explanatory plate, *fig. 1.* by the BEAKED WHALE, borrowed from *Dale's Hist. Harw. 411. tab. 14.*

G E N E R A.

I. WHALE.	page 35
II. CACHALOT.	44
III. DOLPHIN.	48

Div. II. CARTILAGINOUS FISH

BREATHING thro' certain apertures, generally placed on each side the neck, but in some instances beneath, in some above, and from one to seven in number on each part, except in the PIPE FISH, which has only one.

The muscles supported by cartilages, instead of bones.

Explan. Pl. *fig. 2.* the PICKED DOG FISH.

a. The lateral apertures.

* C 2

IV. LAM-

IV. LAMPREY.	page 58
V. SKATE.	62
VI. SHARK.	74
VII. FISHING FROG.	93
VIII. STURGEON.	96
IX. SUN FISH.	100
X. LUMP FISH.	103
XI. PIPE FISH.	106

Div. III. B O N Y F I S H.

THIS division includes those whose muscles are supported by bones or spines, which breathe thro' gills covered or guarded by thin bony plates, open on the side, and dilatable by means of a certain row of bones on their lower part each separated by a thin web, which bones are called the *Radii Branchiostegi*, or the *Gill-covering Rays*.

The tails of all the fish that form this division, are placed in a situation perpendicular to the body, and this is an invariable character.

The later Ichthyologists have attempted to make the number of the branchiostegous rays a character of the *genera*; but I found (yet too late in some instances, where I yielded an implicit faith) that their rule was very fallible, and had induced me into error; but as I borrowed other definitions, it is to be hoped the explanation of the *genera* will be intelligible. I should

should be very disingenuous, if I did not own my obligations in this respect to the works of ARTEDI, Dr. GRONOVIVS, and LINNÆUS.

It is from the last I have copied the great sections of the BONY FISH into

APODAL,	JUGULAR,
THORACIC,	ABDOMINAL*.

He founds this system on a comparison of the ventral fins to the feet of land animals or reptiles, and either from the want of them, or their particular situation in respect to the other fins, establishes his sections.

In order to render them perfectly intelligible, it is necessary to refer to those several organs of movement, and some other parts, in a perfect fish, or one taken out of the three last sections.

The HADDOCK. Expl. Pl. *fig.* 4.

- a.* The pectoral fins.
- b.* ventral fins.
- c.* anal fins.
- d.* caudal fin, or the tail.
- e. e. e.* dorsal fins.
- f.* bony plates that cover the gills.
- g.* branchiostegous rays, and their membranes.
- h.* lateral, or side line.

* *Vide Syst. Nat.* 422.

Sect. I. A P O D A L.

THE most imperfect, wanting the ventral fins ; illustrated by the CONGER, *fig. 3.* This also expresses the union of the dorsal and anal fins with the tail, as is found in some few fish.

XII. EEL.	page 111
XIII. WOLF FISH.	119
XIV. LAUNCE.	123
XV. MORRIS.	125
XVI. SWORD FISH.	126

Sect. II. J U G U L A R.

THE ventral fins *b*, placed before the pectoral fins *a*, as in the HADDOCK, *fig. 4.*

XVII. DRAGONET.	page 130
XVIII. WEEVER.	134
XIX. CODFISH.	137
XX. BLENNY.	167

Sect. III. T H O R A C I C.

THE ventral fins *a*, placed beneath the pectoral fins *b*, as in the FATHER LASHER, *fig. 5.*

XXI. GOBY.	page 174
XXII. BULL-HEAD.	177
XXIII. DOREE.	181
XXIV. FLOUNDER.	184
XXV. GILT-HEAD.	197
XXVI. OPAH.	201
XXVII. WRASSE.	203
XXVIII. PERCH.	211
XXIX. STICKLEBACK.	217
XXX. MACKREL.	221
XXXI. SURMULLET.	227
XXXII. GURNARD.	231

Sect. IV. A B D O M I N A L.

THE ventral fins placed behind the pectoral fins, as in the MINOW, *fig.* 6.

XXXIII. LOCHE.	237
XXXIV. SALMON.	239
XXXV. PIKE.	270
XXXVI. ARGENTINE.	276
XXXVII. ATHERINE.	277
XXXVIII. MULLET.	279
XXXIX. FLYING FISH.	282
XL. HERRING.	284
XLI. CARP.	300

Div. I. CETACEOUS FISH.

NATURE on this tribe hath bestowed an internal structure in all respects agreeing with that of quadrupeds; and in a few other the external parts in both are similar.

Cetaceous Fish, like land animals, breathe by means of lungs, being destitute of gills. This obliges them to rise frequently to the surface of the water to respire, to sleep on the surface, as well as to perform several other functions.

They have the power of uttering sounds, such as bellowing and making other noises, a faculty denied to genuine fish*.

Like land animals they have warm blood, are furnished with organs of generation, copulate, bring forth, and suckle their young, shewing a strong attachment to them.

Their bodies beneath the skin are entirely surrounded with a thick layer of fat (blubber) analogous to the lard on hogs.

The number of their fins never exceeds three, viz. two pectoral fins, and one back fin; but in some species the last is wanting.

Their tails are placed horizontally or flat in respect to their bodies; contrary to the direction of those of all other fish, which have them in a perpendicular site. This situation of the tail enables them to force themselves suddenly to the surface of the water

* *Pontop. Hist. Norw. ii. 123. Blasius Anat. Animal, 288.*

to breathe, which they are so frequently constrained to do.

Many of these circumstances induced *Linnaeus* to place this tribe among his *Mammalia*, or what other writers style quadrupeds.

To have preserved the chain of beings entire, he should in this case have made the genus of *Phocæ*, or *Seals*, and that of the *Trichecus* or *Manati*, immediately precede the whale, those being the links that connect the *Mammalia* or quadrupeds with the fish; for the *Seal* is, in respect to its legs, the most imperfect of the former class; and in the *Manati* the hind feet coalesce, assuming the form of a broad horizontal tail.

Notwithstanding the many parts and properties which cetaceous fish have in common with land animals, yet there still remain others, that in a natural arrangement of the animal kingdom, must determine us after the example of the illustrious *Ray**, to place them in the rank of fish; and for the same reasons, that first of systematic writers assigns,

That the form of their bodies agrees with that of fish.

They are entirely naked, or covered only with a smooth skin.

They live entirely in the water, and have all the actions of fish.

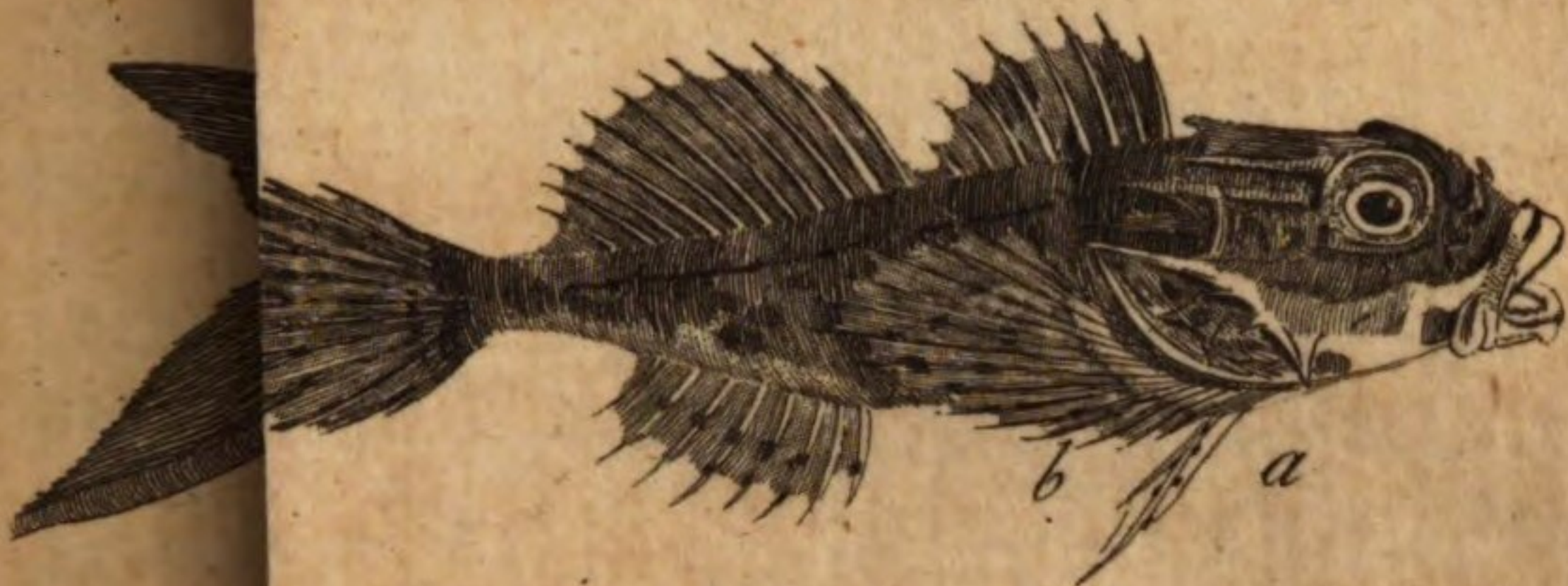
* Who makes two divisions of fish.

1 *Pulmone respirantes.*

2 *Branchiis respirantes.*

Genus

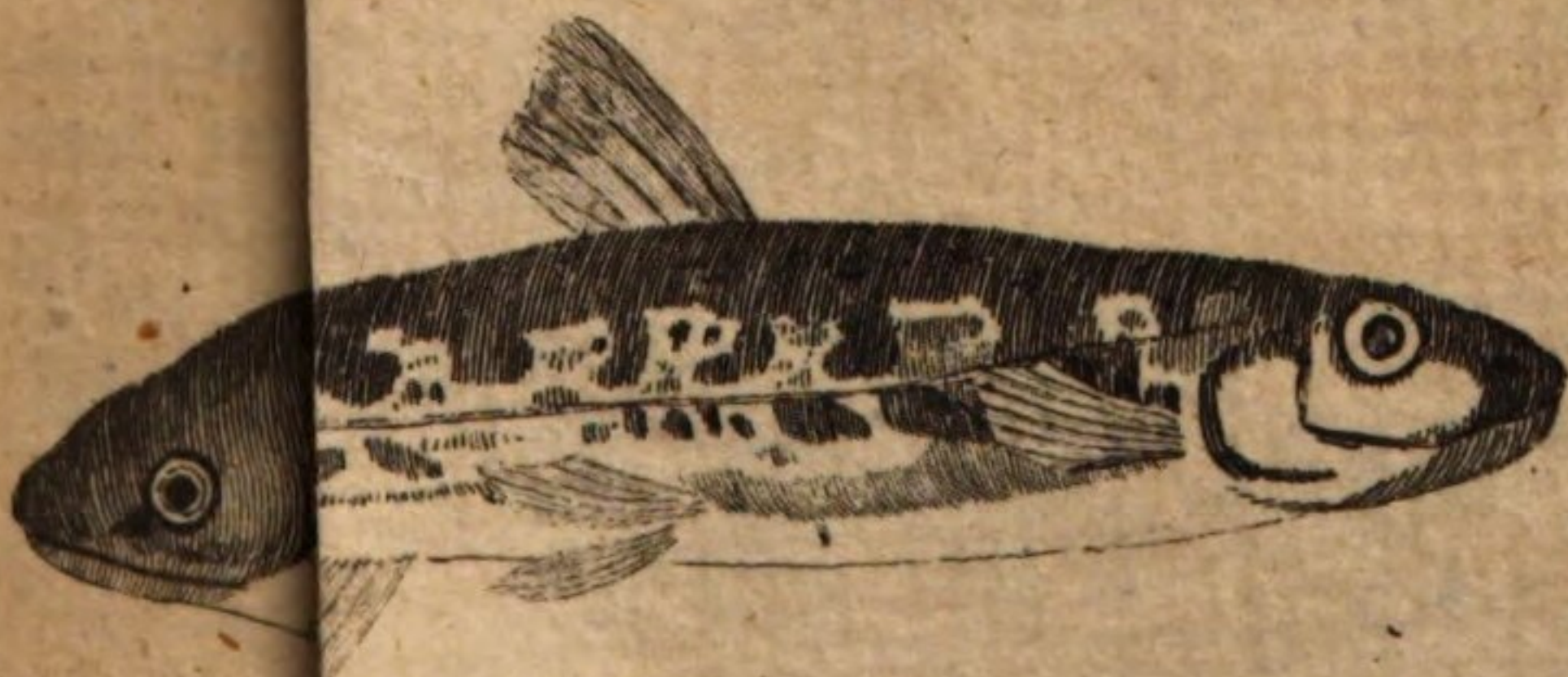
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IV



VI.



Genus I. Cetaceous Fish without teeth, with
horny laminæ in their mouths. WHALE.

I. The COMMON WHALE.

- | | |
|--|---------------------------------------|
| Mυσίκτηρος. <i>Arist. Hist. an. lib.</i> | The Whale. <i>Martens Spitzberg.</i> |
| iii. c. 12. | 130. <i>Crantz. Greenl. 1. 107.</i> |
| Musculus <i>Plinii lib. xi. c. 37.</i> | La Baleine ordinaire. <i>Briffon</i> |
| Balæna. <i>Rondel. 475. Gesner Pisc.</i> | <i>Cet. 218.</i> |
| 114. | Balæna fistula in medio capite, |
| Balæna major, laminas corneas | dorso caudam versus, acumi- |
| in superiore maxillas habens, | nato. <i>Arted syn. 106. Sp. 106.</i> |
| fistula donata, bipinnis. <i>Sib.</i> | Balæna mysticetus. <i>Lin. syst.</i> |
| <i>Phalæn. 28.</i> | 105. <i>Gronlands Walfisk.</i> |
| Balæna vulgaris edentula, dorso | <i>Faun. suec. No. 49.</i> |
| non pinnato. <i>Raii syn. pisc. 6.</i> | Balæna. <i>Gronov. Zooph. 29.</i> |
| Balæna. <i>Rondel. Wil. Ich. 35.</i> | |

THIS species is the largest of all animals: it is even at present sometimes found in the northern seas ninety feet in length; but formerly they were taken of a much greater size, when the captures were less frequent, and the fish had time to grow. Such is their bulk within the *arctic* circle, but in those of the *torrid* zone, where they are unmolested, whales are still seen one hundred and sixty feet long*.

Size.

The head is very much disproportioned to the size of the body, being one-third the size of the fish: the under lip is much broader than the upper. The tongue is composed of a soft spongy fat, capable of

* *Adanson's voy. 174.* From this account we find no reason to disbelieve the vast size of the *Indian* whales, of whose bones and jaws, both *Strabo, lib. xv.* and *Pliny, lib. ix. c. 3.* relate, that the natives made their houses, using the jaws for door-cases. This method of building was formerly practised by the inhabitants of *Greenland*, as we find from *Frobisher*, in his second voyage, p. 18, published in 1578.

yielding

yielding five or six barrels of oil. The gullet is very small for so vast a fish, not exceeding four inches in width. In the middle of the head are two orifices, thro' which it spouts water to a vast height, and with a great noise, especially when disturbed or wounded.

The eyes are no larger than those of an ox.

On the back there is no fin, but on the sides, beneath each eye, are two large ones.

The penis is eight feet in length, inclosed in a strong sheath. The teats in the female are placed in the lower part of the belly.

The tail is broad and semilunar.

This whale varies in color: the back of some being red, the belly generally white. Others are black, some mottled, others quite white, according to the observations of *Marten*, who says, that their colors in the water are extremely beautiful, and that their skin is very smooth and slippery.

Whale-
bone.

What is called *whalebone* adheres to the upper jaw, and is formed of thin parallel laminae, some of the longest four yards in length; of these there are commonly 350 on each side, but in very old fish more; of these about 500 are of a length fit for use, the others being too short. They are surrounded with long strong hair, not only that they may not hurt the tongue, but as strainers to prevent the return of their food when they discharge the water out of their mouths.

It is from these hairs that *Aristotle* gave the name of *Μυσίνκτος*, or the *bearded whale*, to this species, which he tells us had in its mouth hairs instead of teeth;

teeth*; and *Pliny* describes the same under the name of *Musculus***. Tho' the antients were acquainted with this animal, yet as far as we recollect, they were ignorant of their uses as well as capture.

Aldrovand† indeed describes from *Oppian*, what he mistakes for whale fishing: he was deceived by the word *κητος*, which is used not only to express whale in general, but any great fish. The poet here meant the *shark*, and shews the way of taking it in the very manner practised at present, by a strong hook baited with flesh. He describes too its three-fold row of teeth, a circumstance that at once disproves its being a whale:

Δεινὸς χαυλίοδοντος ἀναιδέας ἥντι' ἀκονίας,
Τρισοιχεί πεφύωτας ἐπασσύτερησιν ἀκωχῆϊς.

Halieut. v. lin. 526.

Whose dreadful teeth in triple order stand,
Like spears out of his mouth.

The whale, tho' so bulky an animal, swims with vast swiftnefs, and generally against the wind.

It brings only two young at a time, as we believe is the case with all other whales.

Its food is a certain sort of small snail, and as *Lin-* Food.
næus says, the *medusa*, or sea blubber.

The great resort of this species is within the *arctic* circle, but they sometimes visit our coasts. Whether this was the *British* whale of the antients we cannot pretend to say, only we find, from a line in *Juvenal*, that it was of a very large size,

* ἔτι δὲ καὶ ὁ μυσικητος ὀδόντος μὲν ἐν τῷ σώματι καὶ ἔχει,
τρίχας δὲ ὁμοίας υἱίας. *Hist. an lib. iii. c. 12.*

** *Lib. xi. c. 37.*

† *De Gelis. 261.*

Quanto

Quanto Delphinis Balæna Britannica major.

Sat. x.

As much as *British* whales in size surpass
The dolphin race.

To view these animals in a commercial light, we must add, that the *English* were late before they engaged in the whale-fishery: it appears by a set of queries, proposed by an honest merchant in the year 1575, in order to get information in the business, that we were at that time totally ignorant of it, being obliged to send to *Biskaie* for men skilful in the catching of the whale, and ordering of the oil, and one cooper skilful to set up the staved cask*. This seems very strange; for by the account *Oether* gave of his travels to King *Alfred*, near 700 years** before that period, it is evident that he made that monarch acquainted with the *Norwegians* practising the whale-fishery; but it seems all memory of that gainful employ, as well as of that able voyager *Oether*, and all his important discoveries in the North were lost for near seven centuries.

It was carried on by the *Biscayeners* long before we attempted the trade, and that for the sake not only of the oil, but also of the whalebone, which they seem to have long trafficked in. The earliest notice we find of that article in our trade is by *Hackluyt*†, who says it was brought from the *Bay of St. Laurence* by an *English* ship that went there for the barbes and fynnes of whales and train oil, A. D. 1594, and who found there seven or eight hundred whale

* *Hackluyt's Col. voy. I. 414.*

** *Idem I. 4.*

† *Hackluyt III. 194.*

Jynnes, part of the cargo of two great *Biskaine* ships that had been wrecked there three years before. Previous to that, the ladies stays must have been made of split cane or some tough wood, as Mr. *Anderson* observes in his Dictionary of Commerce *, it being certain that the whale fishery was carried on, for the sake of the oil, long before the discovery of the use of whalebone.

The great resort of these animals was found to be on the inhospitable shores of *Spitzbergen*, and the *European* ships made that place their principal fishery, and for numbers of years were very successful: the *English* commenced that business about the year 1598, and the town of *Hull* had the honor of first attempting that profitable branch of trade. At present it seems to be on the decline, the quantity of fish being greatly reduced by the constant capture for such a vast length of time: some recent accounts inform us, that the fishers, from a defect of whales, apply themselves to the seal fishery, from which animals they extract an oil. This we fear will not be of any long continuance; for these shy and timid creatures will soon be induced to quit those shores by being perpetually harraffed, as the *morse* or *walrus* has already in a great measure done. We are also told, that the poor natives of *Greenland* begin even now to suffer from the decrease of the seal in their seas, it being their principal subsistence; so that should it totally desert the coast, the whole nation would be in danger of perishing thro' want.

* Vol. I. 442.

Royal
Fish.

In old times the whale seems never to have been taken on our coasts, but when it was accidentally flung ashore : it was then deemed a royal fish*, and the king and queen divided the spoil ; the king asserting his right to the head, her majesty to the tail **.

II. The PIKE-HEADED WHALE.

Balæna tripinnis nares habens cum rostro acuto, et plicis in ventre. Sib. Phalain 29, tab. 1.
Idem. *Raii syn. pisc. 16.*
Pike-headed whale. *Dale Harwick, 410. No. 3.*

La Baleine a museau pointu. Briffon Cet. 224.
Balæna fistula duplici in rostro, dorso extremo protuberantia cornuiformi. Arted. syn. 107.
Balæna Boops. Lin. syst. 106.

Size.

THE length of that taken on the coast of Scotland, as remarked by Sir Robert Sibbald, was forty-six feet, and its greatest circumference twenty.

Descr.

The head of an oblong form, sloping down, and growing narrower to the nose ; six feet eight inches from the end of which were two spout-holes, separated by a thin division : the eyes small.

The pectoral fins five feet long, and one and an half broad ; on the back about eight feet and an half from the tail, in lieu of a back fin, was a hard horny protuberance : the tail was nine feet and an half broad.

The belly was uneven, and formed into folds running lengthways.

* Item habet warectum maris per totum regnum *Ballenas et Sturgiones* captos, &c. *Edwardi II. anno 17mo.*

** *Blackston's Com. I. c. 4.*

The

The skin extremely smooth and bright; that on the back black; that on the belly white.

This species takes its name from the shape of its nose, which is narrower and sharper pointed than that of other whales.

III. The F I N F I S H.

*Balæna edentula corpore stric-
tiore, dorso pinnato. Raii
syn. pisc. 9. Dale Harwich,
410. No. 2.*

*Fin Fish. Marten's Spitzberg. 165.
Egede Greenl. 65. Crantz Greenl.
I. 110.*

Le Gibbar. Briffon Cet. 222.

*Balæna fistula in medio capite
tubero penniformi in extre-
mo dorso. Arted. syn. 107.*

*Balæna Physalus. Lin. syst.
106.*

THIS species is distinguished from the common whale by a fin on the back, placed very low and near the tail.

The length is equal to that of the common kind, Descr. but much more slender. It is furnished with whale-bone in the upper jaw, mixed with hairs, but short and knotty, and of little value. The blubber also on the body of this kind is very inconsiderable: these circumstances, added to its extreme fierceness and agility, which renders the capture very dangerous, cause the fishers to neglect it. The natives of *Greenland* tho' hold it in great esteem, as it affords a quantity of flesh, which to their palate is very agreeable.

The lips are brown, and like a twisted rope: the spout hole is as it were split in the top of its head, thro' which it blows water with much more violence, and to a greater height, than the common whale.

42 ROUND-LIPPED WHALE. Class IV.

The fishers are not fond of seeing it, for on its appearance the others retire out of those seas.

Some writers conjecture this species to have been the Φυσάλος, and *Physeter*, or blowing whale of *Oppian*, *Ælian*, and *Pliny**; but since those writers have not left the least description of it, it is impossible to judge which kind they meant; for in respect to the faculty of spouting out water, or blowing, it is not peculiar to any one species, but common to all the whale kind.

IV. The ROUND-LIPPED WHALE.

Balæna tripinnis maxillam inferiorum rotundam et superiore multo latiore habens. *Sib. Phalain.* 33. tab. T. 3.

Idem. Raii syn. pisc. 16.

La Baleine a museau rond. *Briffon Cet.* 222.

B. fistula duplici in fronte maxilla inferiore multo latiore. *Arted. syn.* 107.

Balæna musculus. Lin. syst. 106.

THE character of this species is to have the lower lip broader than the upper, and of a semicircular form.

That taken in 1692 near *Abercorn-Castle*, was seventy-eight feet long, the circumference thirty-five; the *riētus* or gape very wide; the tongue fifteen feet and an half long; the mouth furnished with short whalebone, about three feet in length. On the forehead were two spout holes of a pyramidal form.

The eyes were placed thirteen feet from the end of the nose: the pectoral fins ten feet long: the

* *Oppian, Halieut.* l. *Lin.* 368. *Ælian Hist. an.* ix. c. 49. *Plin. lib.* ix. c. 5.

back fin about three feet high, placed near the tail, which was eighteen feet broad: the belly was full of folds.

This species is said to feed on herrings.

V. The BEAKED WHALE.

Butskopf. *Marten's Spitzberg.*

124.

Bottle-head, or flounders-head.

Dale Harwich, 411. tab. 14.

Nebbe-hual, or beaked whale.

Pontop. Norway, l. 123.

THIS species was taken near *Maldon*, 1717, and thus described by *Dale* and *Marten*.

The length was fourteen feet, the circumference seven and an half; the body very thick, the forehead high, the nose depressed, and of the same thickness its whole length, not unlike the beak of a bird: in the mouth were no teeth.

The eyes large, the eyelids small, and placed a little above the line of the mouth. The spout hole was on the top of the head semicircular, with the corners pointed towards the tail.

The pectoral fins were seventeen inches long. The back was placed rather nearer the tail than the head, and was a foot long: the breadth of the tail was three feet two inches.

These fish sometimes grow to the length of twenty feet; they make but little noise in blowing, are very tame, come very near the ships, and will accompany them for a great way.

Belon describes and figures a fish very much resembling, if not the same with this: he says it fur-

44 BLUNT-HEADED CACHALOT. Class IV.

nished whalebone, *Dont les Dames font aujourd'hui leurs bustes, et arrondissent leurs verdugades**, by which it appears, that this commodity was but newly known at that time in *France*. He adds, that the tongue was very good eating, and both that and the flesh used to be salted for provision.

Genus II. Cetaceous Fish, with teeth in the lower jaws only. CACHALOT.

Sp. I. The BLUNT-HEADED CACHALOT.

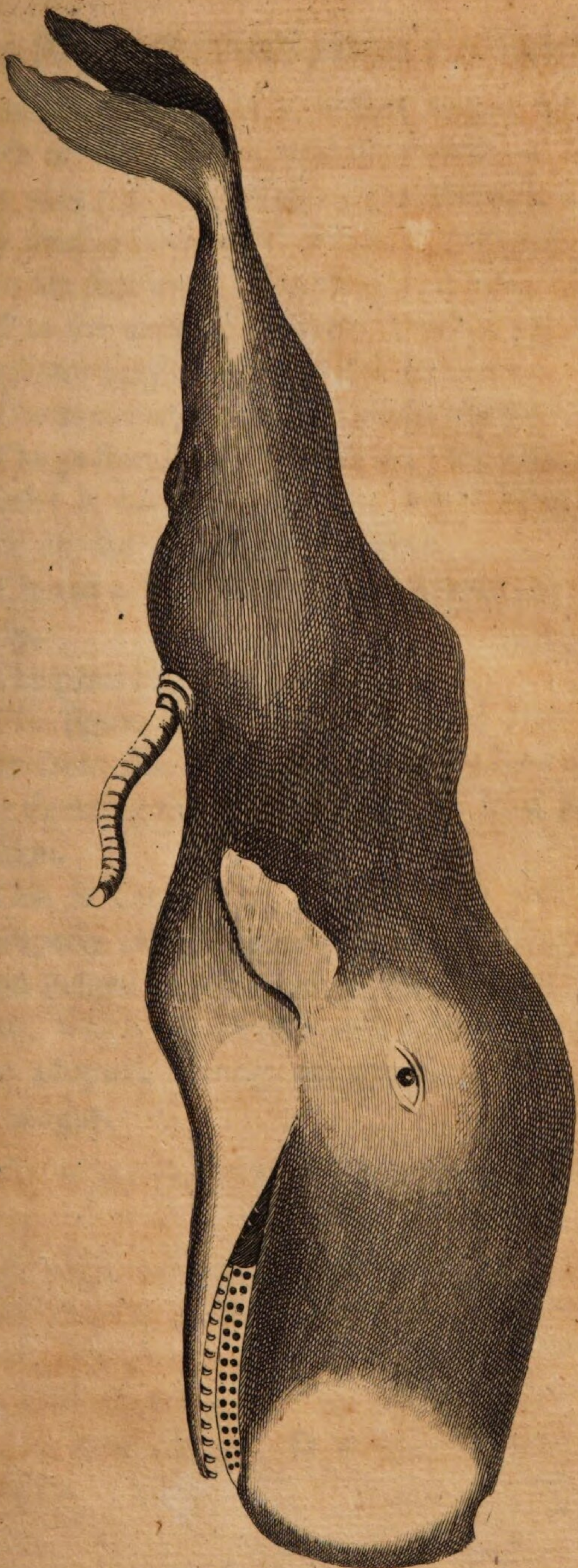
Size. A Fish of this kind was cast ashore on *Blyth* sand, *January* 30, 1762; its length was fifty-four feet, the breadth fourteen: the upper jaw was five feet longer than the lower, whose length was ten feet.

Descr. The head was of a most enormous size, very thick, and above one-third the size of the fish: the end of the upper jaw was quite blunt, and near eight feet high: the spout hole was placed near the end of it.

Teeth. The teeth were placed in the lower jaw, eighteen on each side, all pointing outwards; in the upper jaw opposite to them were an equal number of cavities, in which the ends of the teeth lodged when the mouth was closed. The teeth, figured in *plate* iii. No. 2, was eight inches long, the greatest circum-

* *Belon de la nat. &c. des Poissons*, 1555, p. 6, by which it appears that the *French* were acquainted with that article at least forty years before we were.

BLUNT HEADED CACHALOT.



ference the same. It is hollow within side for the depth of three inches, and the mouth of the cavity very wide: it is thickest at the bottom, and grows very small at the point, bending very much; but in some the flexure is more than in others. These, as well as the teeth of all other whales, we have observed are very hard, and cut like ivory.

The eyes very small, and remote from the nose.

The pectoral fins placed near the corners of the mouth: it had no other fin, only a large protuberance on the middle of the back.

The tail a little forked, and fifteen feet from tip to tip.

The penis eight feet long.

The figure *plate ii.* we borrowed from a print taken from the fish published by *William Bingham*; after directing the tail to be placed in a horizontal position.

This is one of the species which yield what is improperly called *sperma ceti*, that substance being found lodged in the head of the fish that form this genus, which the *French* call *Cachalot*, a name we have adopted, having no generical term for it in our tongue.

Sperma-
ceti.

II. The GREAT-HEADED CACHALOT.

Trumpa. <i>Purchas's Pilgrimes</i> iii. 471.	Le cachalot a dents en faucilles. <i>Briffon Cet.</i> 229.
Balæna major in inferiore tan- tum maxilla dentata denti- bus arcuatis falciformibus, pinnam five spinam in dorso habens. <i>Sib. Phalain.</i> 13.	The Parmacitty Whale, or Pot Wal fish. <i>Dale Harwich</i> , 413.
<i>tab. A. 1. Raii syn. pisc.</i> 15.	<i>Phyfeter microps. Lin. syst.</i> 107. <i>Arted. syn.</i> 104.
	Cashalot, Catodon, or Pot fish. <i>Crantz Greenl. I.</i> 112.

ACCORDING to Sir Robert Sibbald's observa-
tions on one taken on the coast of Scotland,
the head was of an oblong form, and of such a
bulk as to exceed that of all the rest of the body.

The end of the upper jaw was five feet longer
than that of the lower: a little above the middle
of the nose was placed the spout hole, divided in
the middle, and covered with a lid.

Teeth.

In the lower jaw were forty-two teeth, bent like a
fickle, thick in the middle, and growing smaller
towards each end: a specimen of a small one is en-
graved, *plate iii. No. 3.*

The eyes were very small, not larger than those
of a hadock.

On the middle of the back was a long spine, in-
stead of a fin.

The color of this fish was black, the skin of a
filky appearance, and very thin.

The length of this fish was fifty-two feet; above
seventy gallons of oil were extracted from it, and a
great quantity of *sperma ceti*.

Linnaeus informs us, that this species pursues and
terrifies the porpoisses so much, as often to drive
them on shore.

III. The

III. The ROUND-HEADED CACHALOT.

Balæna minor in inferiore maxilla tantum dentata sine pinna aut pinna in dorso. <i>Sib. Phalain. 9. Raii syn. pisc. 15.</i>	Le petit Cachalot. <i>Briffon Cet. 228.</i> Phyfeter Catodon. <i>Lin. syst. 107.</i> Catodon fistula in rostro. <i>Ar- ted. synon. 108.</i>
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THIS species was taken on one of the *Orkney* isles, a hundred and two of different sizes being cast ashore at one time, the largest twenty-four feet in length.

The head was round, the opening of the mouth small: *Sibbald* says it had no spout hole, but only nostrils. We rather think, that the former being placed at the extremity of the nose was mistaken by him for the latter.

The teeth we have in our cabinet of this species Teeth. (*plate iii. No. 4.*) are an inch and three quarters long, and in the largest part, of the thickness of one's thumb. The top is quite flat, and marked with concentric lines; the bottom is more slender than the top, and pierced with a small orifice.

The back fin was wanting; instead was a rough space.

IV. The HIGH-FINNED CACHALOT.

Balæna macrocephala tripinnis, quæ in mandibula inferiore dentes habet minus inflexos et in planum def-	nentes. <i>Sib. Phalain. 18.</i> <i>Raii syn. pisc. 16.</i> Le Cachalot a dents plattes. <i>Briffon. Cet. 230.</i>
---	--

ONE of this species was cast on the *Orkney* isles in 1687. The spout hole was placed in front, and on the middle of the back was a high fin,

fin, which *Sibbald* compares to the mizen mast of a ship. The head abounded with *sperma ceti* of the best sort.

Teeth.

The teeth of this kind are very slightly bent; that which we have figured, *plate iii. No. 1.* is seven inches three quarters in length; the greatest circumference nine: it is much compressed on the sides; the point rather blunt than flat; the bottom thin, having a very narrow but long orifice, or slit, hollowed to the depth of five inches and a quarter, and the tooth was immerfed in the jaw as far as that hollow.

Genus III. Cetaceous Fish, with teeth in both jaws. DOLPHIN.

Sp. 1. The D O L P H I N.

- | | |
|--|--------------------------------------|
| Δελφίς. <i>Arist. Hist. an. lib. vi.</i> | Delphinus corpore longo sub- |
| c. 12. Δελφίν. <i>Ælian. lib.</i> | tereti, rostro longo acuto. |
| I. c. 18. | <i>Arted. syn. 105.</i> |
| Delphinus <i>Plinii, lib. ix. c. 8.</i> | Le Dauphin. <i>Briffon Cet.</i> |
| Le Daulphin, ou oye de mor. | 233. |
| <i>Belon Poiss. 7.</i> | Delphinus Delphis. <i>Lin. syst.</i> |
| Delphinus. <i>Rondel. 459. Ges-</i> | 108. |
| <i>ner pisc. 319. Caii opusc. 113.</i> | Dolphin. <i>Borlase Cornwall,</i> |
| Delphinus Antiquorum. <i>Wil.</i> | 264. tab. 27. <i>Crantz Greenl.</i> |
| <i>Ictb. 28. Raii syn. pisc. 12.</i> | I, 115. |

HISTORIANS and philosophers seem to have contended who should invent most fables concerning this fish. It was consecrated to the Gods, was celebrated in the earliest time for its fondness of the human race, was honored with the title of the
Sacred

Sacred Fish *, and distinguished by those of *Boylving*, and *Philanthropist*. It gave rise to a long train of inventions, proofs of the credulity and ignorance of the times.

Aristotle steers the clearest of all the antients from these fables, and gives in general so faithful a natural history of this animal, as evinces the superior judgment of that great philosopher, in comparison of those who succeeded him. But the elder *Pliny*, *Ælian*, and others, seem to preserve no bounds in their belief of the tales related of this fish's attachment to mankind.

Pliny ** the younger, (apologizing for what he is going to say) tells the story of the enamoured dolphin of *Hippo* in a most beautiful manner. It is too long to be transcribed, and would be injured by an abridgement; therefore we refer the reader to the original, or to Mr. *Melmouth's* elegant translation.

Scarce an accident could happen at sea but the dolphin offered himself to convey to shore the unfortunate. *Arion*, the musician, when flung into the ocean by the pirates, is received and saved by this benevolent fish.

Inde (sive majus) tergo Delphina recurvo,
Se memorant oneri supposuisse novo.
Ille sedens citharamque tenens, pretiumque vehendi
Cantat, et æquoreas carmine mulcet aquas.

Ovid. Fasti. lib. ii. 113.

But (past belief) a dolphin's arched back,
Preserved *Arion* from his destined wrack;
Secure he sits, and with harmonious strains,
Requites his bearer for his friendly pains.

* *Athenæus*, 281.

** *Epist. lib. ix. ep. 33.*

We are at a loss to account for the origin of those fables, since it does not appear that the dolphin shews a greater attachment to mankind than the rest of the cetaceous tribe. We know that at present the appearance of this fish, and the porpessè, are far from being esteemed favorable omens by the seamen; for their boundings, springs and frolics in the water, are held to be sure signs of an approaching gale.

It is from their leaps out of that element that they assume a temporary form that is not natural to them, but which the old painters and sculptors have almost always given them. A dolphin is scarce ever exhibited by the antients in a strait shape, but almost always incurvated: such are those on the coin of *Alexander the Great*, which is preserved by *Belon*, as well as on several other pieces of antiquity. The poets describe them much in the same manner, and it is not improbable but that the one had borrowed from the other:

Tumidumque pando transilit dorso mare
Tyrrhenus omni piscis exultat freto,
Agitatque gyros. *Senec. Trag. Agam. 450.*

Upon the swelling waves the dolphins shew
Their bended backs, then swiftly darting go,
And in a thousand wreaths their bodies throw.

Descr.

The natural shape of the dolphin is almost strait, the back being very slightly incurvated, and the body slender: the nose is long, narrow, and pointed, not much unlike the beak of some birds, for which reason the *French* call it *L' oye de mer*.

Teeth.

It has in all forty-two teeth, twenty-one in the upper jaws, and nineteen in the lower, a little above

an

1.
p. 48.



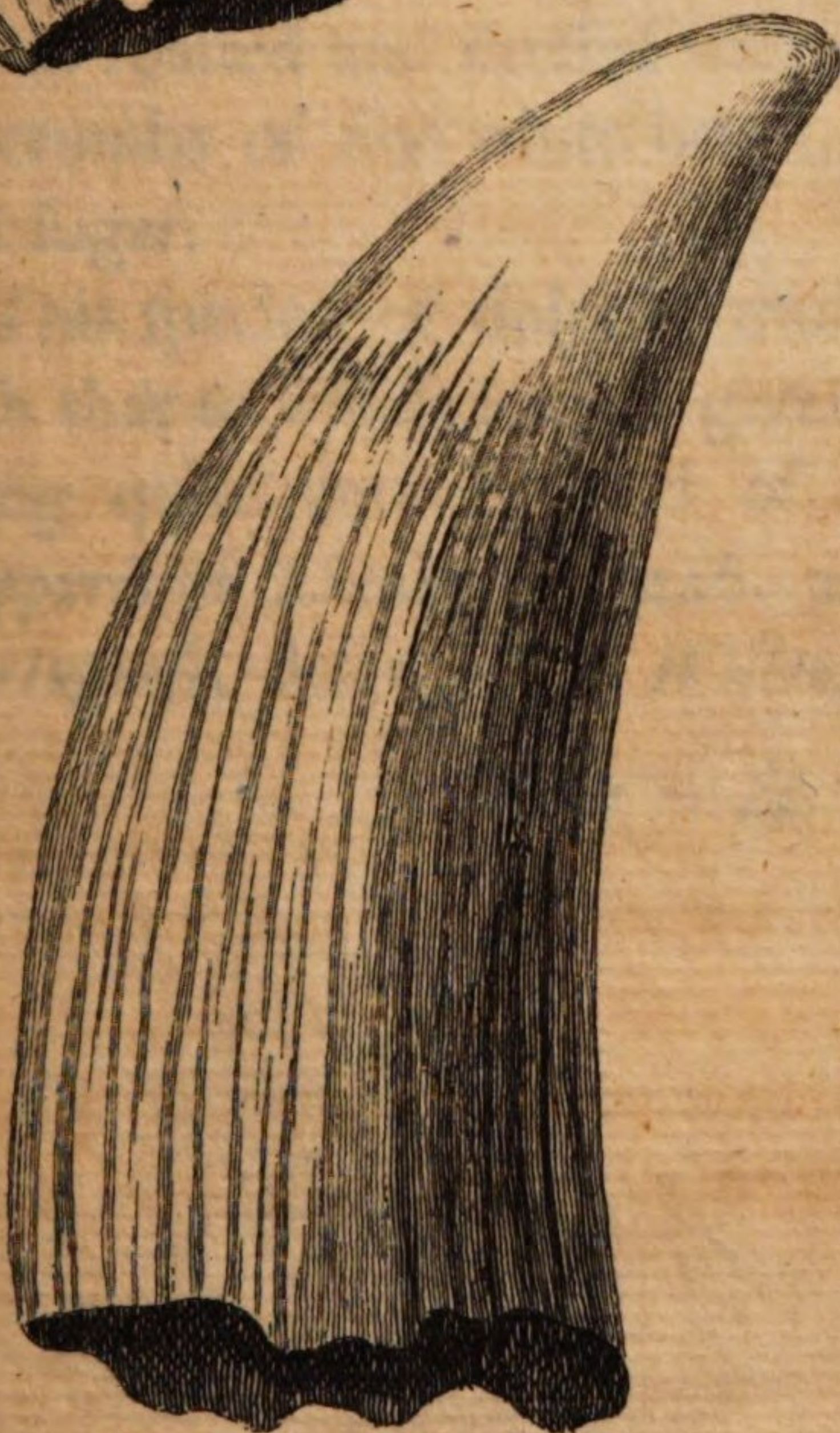
3.
p. 46.



5
p. 50.



2
p. 44.



4
p. 47.



P. Mayall del. &

an inch long, conic at their upper end, sharp pointed*, bending a little in. They are placed at small distances from each other, so that when the mouth is shut, the teeth of both jaws lock into one another: a single one is figured *plate iii. No. 5.*

The spout hole is placed in the middle of the head.

The back fin is high, triangular, and placed rather nearer to the tail than to the head; the pectoral fins situated low.

The tail is semilunar.

The skin is smooth, the color of the back and sides dusky; the belly whitish.

It swims with great swiftness: its prey is fish.

It was formerly reckoned a great delicacy: Doctor *Caius* says, that one which was taken in his time, was thought a present worthy the Duke of *Norfolk*, who distributed part of it among his friends. It was roasted and dressed with porpessè sauce, made of crumbs of fine white bread, mixed with vinegar and sugar.

This species of dolphin must not be confounded with that to which seamen gives the name, the latter being quite another kind of fish, the *Coryphæna*, *Hippuris* of *Linnaeus*, p. 446. and the *Dorado* of the *Portuguese*, described by *Willoughby*, p. 213.

* *Plate iii. fig. 5.*

II. The P O R P E S S E.

Φώναινα. <i>Arist. Hist. an. lib.</i>	Le Marsouin. <i>Briffon Ceta.</i>
vi. c. 12.	234.
Tursio <i>Plinii. lib. ix. c. 9.</i>	Delphinus corpore fere coniformi, dorso lato, rostro sub-
Le Marsouin. <i>Belon.</i>	acuto. <i>Arted. synonym. 104.</i>
Tursio. <i>Rondel. 474. Gesner</i>	Delphinus Phocæna. <i>Lin. syst.</i>
<i>pisc. 711.</i>	108.
Porpesse. <i>Wil. Ictb. 31. Raii</i>	Marswin, Tumblare. <i>Faun.</i>
<i>syn. pisc. 13. Crantz Greenl.</i>	<i>suec. No. 51.</i>
I, 114. <i>Kolben's Hist. Cape,</i>	
II. 200.	

THESE fish are found in vast multitudes in all parts of the sea that wash these islands, but in greatest numbers at the time when fish of passage appear, such as mackrel, herrings, and salmon, which they pursue up the bays with the same eagerness as a pack of dogs does a hare. In some places they almost darken the sea as they rise above water to take breath: but porpesses not only seek for prey near the surface, but often descend to the bottom in search of sand eels, and sea worms, which they root out of the sand with their noses in the same manner as hogs do in the fields for their food.

Descr.

Their bodies are very thick towards the head, but grows slender towards the tail, forming the figure of a cone.

The nose projects a little, is much shorter than that of the dolphin, and is furnished with very strong muscles, which enables it the readier to turn up the sand.

Teeth.

In each jaw are forty-eight teeth, small, sharp pointed, and a little moveable: like those of the dolphin,

phin, they are so placed as that the teeth of one jaw locks into those of the other when closed.

The tongue is flat, pectinated at the edges, and fastened down to the bottom of the mouth.

The eyes small; the spout hole on the top of the head.

On the back is one fin placed rather below the middle; on the breast are two fins. The tail semilunar.

The color of the porpessè is generally black, and the belly whitish, not but they sometimes vary; for in the river *St. Laurence* there is a white kind; and Doctor *Borlase*, in his voyage to the *Scilly* isles, observed a small species of cetaceous fish, which he calls *thornbacks*, from their broad and sharp fin on the back, some of these were brown, some quite white, others spotted: but whether they were only a variety of this fish, or whether they were small *grampuses*, which are also spotted, we cannot determine.

The porpessè is remarkable for the vast quantity ^{Fat.} of the fat or lard that surrounds the body, which yields a great quantity of excellent oil: from this lard, or from their rooting like swine, they are called in many places *sea hogs*; the *Germans* call them *meerschwein*; the *Swedes*, *marssuin*; and the *English*, *porpessè*, from the *Italian*, *porco pesce*.

III. The GRAMPUS.

Orca *Plinii*, lib. ix. c. 6.

L'oudre ou grand marsouin.

Belon, 13.Orca. *Rondel*. 483. *Gesner pisc.*

635. Leper, Springer.

Schonevelde, 53.Butskopf. *Marten's Spitzberg*.

124.

Balæna minor utraque maxilla

dentata. *Sib. Phalæn.* 7, 8.*Wil. Ictb.* 40. *Raii syn. pisc.*

15.

L. Epaulard. *Briffon Cet.* 236.Delphinus orca. *Lin. syst.* 108.Lopare, Delphinus rostro sursum repando, dentibus latis ferratis. *Arted. syn.* 106.

THIS species is found from the length of fifteen feet to that of twenty-five. It is remarkably thick in proportion to its length, one of eighteen feet being in the thickest place ten feet diameter. With reason then did *Pliny* call this an immense heap of flesh, armed with dreadful teeth *.

It is extremely voracious, and will not even spare the porpessæ, a congenerous fish. It is said to be a great enemy to the whale, and that it will fasten on it like a dog on a bull, till the animal roars with pain.

Teeth.

The nose is flat, and turns up at the end. There are thirty teeth in each jaw; those before are blunt, round, and slender; the farthest sharp and thick: between each is a space adapted to receive the teeth of the opposite jaw when the mouth is closed.

The spout hole is in the top of the neck. In respect to the number and site of the fins, it agrees with the dolphin.

* Cujus imago nulla representatione exprimi possit alia, quam carnis immensæ dentibus truculentis. *Lib. ix. c. 6.*

The color of the back is black, but on each Color,
 shoulder is a large white spot, the sides marbled
 with black and white, the belly of a snowy whiteness.

These sometimes appear on our coasts, but are Place,
 found in much greater numbers off the *North Cape*
 in *Norway*, whence they are called *North Capers*.
 These and all other whales are observed to swim
 against the wind, and to be much disturbed, and
 tumble about with unusual violence at the approach
 of a storm.

Linnæus and *Artemi* say, that this species is fur-
 nished with broad serrated teeth, which as far as we
 have observed, is peculiar to the *shark* tribe. We
 therefore suspect that those naturalists have had re-
 course to *Rondeletius*, and copied his erroneous ac-
 count of the teeth: Sir *Robert Sibbald*, who had
 opportunity of examining and figuring the teeth of
 this fish, and from whom we take that part of our
 description, giving a very different account of them.

It will be but justice to say, that no one of
 our countrymen ever did so much towards form-
 ing a general natural history of this kingdom
 as Sir *Robert Sibbald*: he sketched out a fine out-
 line of the Zoology of *Scotland*, which compre-
 hends the greatest part of the *English* animals, and,
 we are told, had actually filled up a considerable
 part of it: he published a particular history of the
 county of *Fife*, and has left us a most excellent
 history of the whales which frequent the coast of
Scotland. We acknowledge ourselves much indebted
 to him for information in respect to many of those
 E fish,

fish, few of which frequent the southern seas of those kingdoms, and those that are accidentally cast ashore on our coasts, are generally cut up by the country people, before an opportunity can be had of examining them.

Div. II. CARTILAGINOUS FISH.

THIS title is given to all fish whose muscles are supported by cartilages instead of bones, and comprehends the same genera of fish to which *Linnaeus* has given the name of *amphibia nantes*: but the word *amphibia*, ought properly to be confined to such animals who inhabit both elements, and can live without any inconvenience for a considerable space, either on land or under water. This definition therefore excludes all that form this division.

Many of the cartilaginous fish are viviparous, being excluded from an egg, which is hatched within them. The egg consists of a white and a yolk, and is lodged in a case, formed of a thick tough substance, not unlike softened horn: such are the eggs of the Ray and Shark kinds.

Some again differ in this respect, and are oviparous; such is the Sturgeon, and others.

They breathe either thro' certain apertures beneath, as in the Rays; on their sides as in the Sharks, &c. or on the top of the head, as in the Pipe-fish; for they have not covers to their gills like the bony fish.

Genus IV. Slender Eel-shaped body;
Seven apertures on each side;
One on the top of the head.

No pectoral or ventral fins. LAMPREY.

Sp. I. The L A M P R E Y.

La Lamproye de mer. *Belon.* Petromyzon maculosus ordinibus dentium circiter viginti.
66.

Lampetra. *Rondel.* 398. *Arted. synon.* 90.

Lampreda. *Gesner. Paralip.* Petromyzon marinus. P. ore
22. *pisc.* 590. intus papilloso, pinna dorsali

Lamprey, or Lamprey Eel. posteriori a cauda distincta.
Wil. Ictb. 105. *Lin. syst.* 394. *Faun. suec.*

Lampetra. *Raii syn. pisc.* 35. No. 292.

Place.

LAMPREYS are found at certain seasons of the year in several of our rivers, but the *Severn* is the most noted for them*. They are sea fish, but like salmon, quit the salt waters, and ascend the latter end of the winter, or beginning of spring, and after a stay of a few months return again to the ocean, a very few excepted. The best season for them is the months of *March*, *April*, and *May*; for they are more firm when just arrived out of the salt water than they are afterwards, being observed to be much wasted, and very flabby at the approach of hot weather.

They are taken in the nets along with salmon and shad, and sometimes in weels laid in the bottom of the river.

* They are also found in the most considerable of the *Scotch* and *Irish* rivers.

It has been an old custom for the city of *Gloucester*, annually, to present his majesty with a *lamprey* pye, covered with a large raised crust. As the gift is made at *Christmas*, it is with great difficulty the corporation can procure any fresh lampreys at that time, tho' they give guinea a-piece for them, so early in the season.

They are reckoned a great delicacy, either when potted or stewed, but are a surfeiting food, as one of our monarchs fatally experienced, *Henry* the First's death being occasioned by a too plentiful meal of these fish.

Lampreys are sometimes found so large as to weigh four or five pounds.

The mouth is round and placed rather obliquely below the end of the nose: the edges are jagged, which enables them to adhere the more strongly to the stones, as their custom is, and which they do so firmly as not to be drawn off without some difficulty.

We have heard of one weighing three pounds, which was taken out of the *Esk*, adhering to a stone of twelve pounds weight, suspended at its mouth, from which it was forced with no small pains.

There are in the mouth twenty rows of small teeth, disposed in circular orders, and placed far within.

The color is dusky, irregularly marked with dirty yellow, which gives the fish a disagreeable look.

We believe that the antients were unacquainted with this fish; so far is certain, that which Doctor *Arbutnot*, and other learned men, render the word *lamprey*, is a species unknown in our seas, being the

Not the
Muræna

muræna of Ovid, Pliny, and others, for which we want an *English* name.

The words *Lampetra* and *Petromyzon*, are but of modern date, invented from the nature of the fish; the first a *Lambendo petras*, the other from Πέτρος, and Μύζω, because they are supposed to lick, or suck the rocks.

II. The LESSER LAMPREY.

La Lamproye d'eau douce.	Petromyzon fluviatilis.	Lin.
Belon. 67.	Syst. 394.	
Lampredæ alterum genus. Ges-	Nein-oga, natting.	Faun. suec.
ner pisc. 597.	No. 290.	Petromyzon pinna
Lampetra medium genus. Wil.	dorsali posteriori angulata.	
Ich. 106. Raii syn. pisc. 35.	Ibid.	
Neunaugen. Kram. 282.	Gronov. Zooph. No. 159.	

Descr.

THIS species sometimes grows to the length of ten inches.

The mouth is formed like that of the preceding, On the upper part is a large bifurcated tooth; on each side are three rows of very minute ones: on the lower part are seven teeth, the exterior of which on each side is the largest.

The irides are yellow. As in all the other species between the eyes, on the top of the head, is a small orifice of great use to clear its mouth of the water that remains on adhering to the stones, for thro' that orifice it ejects the water in the same manner as cetaceous fish.

On the lower part of the back is a narrow fin, beneath that rises another, which at the beginning is high

high and angular, then grows narrow, furrounds the tail, and ends near the anus.

The color of the back is brown or dusky, and Color. sometimes mixed with blue; the whole under-side silvery. These are found in the *Thames*, *Severn*, and *Dee*, are potted with the larger kind, and are by some preferred to it, as being milder tasted. Vast quantities are taken about *Mortlake*, and sold to the *Dutch* for bait for their turbot and cod fishery.

III. The P R I D E.

Une Civelle, un Lamproyon.	Petromyzon branchialis. <i>Lin.</i>
<i>Belon.</i> 67.	<i>Syst.</i> 394.
Lampetra parve et fluviatilis.	Lin-ahl. <i>Faun. suec.</i> No. 291.
<i>Rondel. pisc. fl.</i> 202.	Petromyzon pinna dorsali
Lampreda minima. <i>Gesner pisc.</i>	posteriori lineari, labio oris
598.	latere postico lobato. <i>Ibid.</i>
Pride. <i>Plot. Oxf.</i> 182. plate x.	Uhlen. <i>Kram.</i> 384.
Lampern, or Pride of the <i>Isis</i> .	<i>Gronov. Zooph.</i> No. 160.
<i>Wil. Ictb.</i> 104. <i>Raii syn. pisc.</i> 35.	

WE have seen these of the length of eight inches, and about the thickness of a swan's quill, but they are generally much smaller.

They are frequent in the rivers near *Oxford*, particularly the *Isis*, but not peculiar to that county, being found in others of the *English* rivers, where, instead of concealing themselves under the stones, they lodge themselves in the mud, and never are observed to adhere to any thing like other lampreys.

The body is marked with numbers of transverse lines, that pass cross the sides from the back to the bottom of the belly, which is divided from the mouth to the anus by a strait line.

The back fin is not angular like that of the former, but of an equal breadth. The tail is lanceolated, and sharp at the end.

Genus V. Body broad, flat, and thin.

Five apertures on each side placed beneath:

Mouth situated quite below. RAY.

* With sharp teeth.

I. The S K A T E.

Batis? *Arist. Hist. an. lib. I. c. 5. lib. vi. c. 10. Oppian Halieut. I. 103.*

Raia undulata five cinerea. *Rondel. 346. Gesner pisc. 791.*

The Skate, or Flaire. *Wil. Ich. 69. Raii syn. pisc. 25.*

Raia Batis. Lin. syst. 395.

Raia varia, dorso medio glabro, unico aculeorum ordine in cauda. *Arted. synon. 102.*

Gronov. Zooph. No. 157.

Size.

THIS species is the thinnest in proportion to its bulk of any of the genus, and also the largest, some weighing near two hundred pounds.

Descr.

The nose, tho' not long, is sharp pointed; above the eyes is a set of short spines: the whole upper part of that we examined was of a pale brown. Mr. Ray says, some he saw were streaked with black: the lower part is white, marked with great numbers of minute black spots. The jaws were covered with small granulated but sharp-pointed teeth.

The

The tail is of a moderate length : near the end are two fins : along the top of it is one row of spines, and on the edges are irregularly dispersed a few others, which makes us imagine with Mr. Ray, that in this respect these fish vary, some having one, others more orders of spines on the tail.

It is remarked that in the males of this species the fins are full of spines.

Skates generate in *March* and *April*, at which time they swim near the surface of the water, several of the males pursuing one female. They adhere so fast together in coition, that the fishermen frequently draw up both together, tho' only one has taken the bait. The females begin to cast their *purses*, as the fishermen call them (the bags in which the young are included) in *May*, and continue doing it till *September*. In *October* they are exceedingly poor and thin ; but in *November* they begin to improve, and grow gradually better till *May*, when they are in the highest perfection. The males go sooner out of season than the females.

Genera-
tion.

II. The SHARP-NOSED RAY.

Bæ? *Arist. Hist. an. lib. v. c.* *Wil. Ictb. 71.* *Raii syn. pisc. 26.*
 5. *Oppian Halieut. ii. 141.* *Raia oxyrinchus. Lin. syst.*
Bos ovidii? 94. Plinii lib. ix. 395.
c. 24. *Raia varia tuberculis decem*
Raia oxyrinchus. Rondel. 347. *aculeatis in medis dorso.*
Gesner pisc. 792. *Arted. synon. 101.*

Size,

IN fishing in the *Menai* (the strait that divides *Anglesea* from *Caernarvonshire*) July 1768, we took one of this species whose length was near seven feet, and breadth five feet two inches; when just brought on shore, it made a remarkable snorting noise.

The nose was very long, narrow, and sharp-pointed, not unlike the end of a spoutoon.

The body was smooth, and very thin in proportion to the size; the upper part ash-colored, spotted with numerous white spots, and a few black ones.

The tail was thick; towards the end were two small fins, on each side was a row of small spines, with another row in the middle, which run some way up the back.

The lower part of the fish was quite white.

The mouth very large, and furnished with numbers of small sharp teeth bending inwards.

On its body we found the *birudo muricata*, which adhered very strongly, and when taken off left a black impression.

This fish has been supposed to be the *Bos* of the ancients, which was certainly some enormous species of

of Ray, tho' we cannot pretend to determine the particular kind: *Oppian* styles it,

Ευρυτάτῳ παντεσσι μετ' ἰχθύσιν.

Broadest among fishes.

He adds an account of its fondness of human flesh, and the method it takes of destroying men, by over-laying and keeping them down by its vast weight till they are drowned. *Phile* gives much the same relation*. We are inclined to afford them credit, since a modern writer**, of undoubted authority, gives the very same account of a fish found in the *South Seas*, the terror of those employed in the pearl fishery. It is a species of ray, called there *Manta*, or the *Quilt*, from its surrounding and wrapping up the unhappy divers till they are suffocated; to guard against which, the negroes never go down without a sharp knife to defend themselves against the assaults of this terrible enemy.

* *De propriet. Anim.* 85.

** *Ulloa's voy.* I. 132. 8vo. edit.

III. The ROUGH RAY.

Raia fullonica. *Rondel.* 357.

Gesner pisc. 797.

Raia aspera nostras, the white horse. *Wil. Ictb.* 78. *Raii syn. pisc.* 26.

Raia fullonica. *Lin. syst.*

Raia dorso toto aculeato, aculeorum ordine simplici ad oculos, duplici in canda. *Arted. syn.* 101. *Gronov. Zooph. No.* 155.

THIS species derives its *Latin* name from the instruments fullers make use of in smoothing cloth, the back being rough, with small spines like that.

These spines are spread not only over the back, but the upper side of the fins and the head: near each eye is a semicircular order of larger spines, and about the nose are a few others; a row of the same kind go half way down the back: the tail is armed with a double row of still greater spines.

The color of the upper part is ash-color, mixed with yellow; the lower part of the body entirely white.

This species we believe to be rare, having never met with it; therefore are obliged to borrow our description from Mr. *Willoughby*.

IV. The C R A M P R A Y.

Nαρκη. Arist. Hist. an. lib. v. c. 5. ix. c. 37. Oppian Halieut. I. 104. ii. 56. iii. 149.
Torpedo. Plinii lib. ix. c. 42.
La Tremble ou Torpille. Belon. 78, 81.
Torpedo. Rondel. Gesner pisc.

Torpedo. Cramp Fish. Wil. Ictb. 81. Raii syn. pisc. 28.
Smith's Hist. Waterford, 271.
Raia Torpedo. Lin. syst. 395.
Raia tota lævis. Arted. synon. 102. Gronov. Zooph. Na. 153. tab. 9.

THE narcotic or numbing quality of this fish has been taken notice of in all ages: it is so powerful when the fish is alive, as instantly to deprive the person who touches it of the use of his arm, and even to affect him if he touches it with a stick. *Oppian* goes so far as to say, that it will benumb the astonished fisherman, even thro' the whole length of line and rod.

Ναὶ μὲν καὶ ΝΑΡΚΗ σφέτερον νόον ἐκ ἀπολείπει,
 Πληγῇ ἀνιάζουσα. Τιταῖνομένη δ' ὀδυνησιν
 Ὀρμιῇ λαγόνας προστύσσει. Αἰψά δὲ χαίτης
 Ἰππείης δόνακος τε δῖεδραμεν, ἐς δ' αἰλῆς
 Δεξιτερὴν ἔσκηψε φερώνυμον ἰχθυὸν ἄλγος.
 Πολλάκι δ' ἐκ παλάμης κάλαμον πέσεν, ὅπλα τε θήρης
 Τοῖον γὰρ κρύφαλλον ἐνιζέει αὐτὶκα χεῖρι.

The hook'd *Torpedo* ne'er forgets its art,
 But soon as struck begins to play its part,
 And to the line applies its magic fides,
 Without delay the subtil power glides
 Along the pliant rod, and slender hairs,
 Then to the fisher's hand as swift repairs:
 Amaz'd he stands; his arm's of sense bereft,
 Down drops the idle rod; his prey is left:
 Not less benumb'd, than if he had felt the whole
 Of frost's severest rage beneath the arctic pole.

But

But great as its powers are when the fish is in vigor, they are impaired as it declines in strength, and totally cease when it expires. They impute no noxious qualities to it as a food, being commonly eat by the *French*, who find them more frequently on their coasts than we do on ours.

This wonderful faculty is occasioned by a most rapid, frequent, and violent contraction and exertion of its muscles, against any object that touches it. The cause is prettily explained by M. *Reaumur**, to whom we refer the inquisitive reader for a farther account.

We may mention a double use in this strange power the *torpedo* is endued with; the one, when it is exerted as a means of defence against voracious fish, who are at a touch deprived of all possibility of seizing their prey.

The other is well explained by *Pliny*, who tells us, it attains by the same powers its end in respect to those fish it wishes to ensnare. *Novit torpedo vim suam, ipsa non torpens; mersaque in limo se occultat piscium qui securi supernatantes obtorpuere, corripiens**.*

Descr.

These fish are sometimes found of the weight of fifteen pounds.

The body is almost circular, and is thicker than others of the ray kind. The skin is soft, smooth,

* *Hist. de l'Academie des Sciences*, 1714.

** "The *torpedo* is well acquainted with its own powers, tho' itself never affected by them. It conceals itself in the mud, and benumbing the fish that are carelessly swimming about, makes a ready prey of them."

and

and of a yellowish color, marked with large annular spots: the eyes very small, and almost covered with the skin; behind each is a semilunar orifice; the mouth is placed below, and furnished with small sharp teeth.

Along each side of the body is a narrow fin; near the vent two others. The tail is thick towards the base, and grows small towards the end: on the upper part are two small fins placed near each other; the end is round.

These fish inhabite hot, or at least warm climates, and are very rarely taken in the *British* seas: the only one we ever heard of on our coasts, being took off the county of *Waterford*.

** With blunt teeth.

V. The T H O R N B A C K.

La Raye bouclée. *Belon*. 70.

Raia clavata. *Rondel*. 353.

Gesner pisc. 795.

Steinroch. *Schonevelde*, 59.

Thornback. *Wil. Ichth*. 74.

Raii syn. pisc. 26.

Raia clavata. *Lin. syst*. 297.

Gronov. Zooph. No. 154.

R. aculeata dentibus tuberculosis, cartilagine transversa abdominali. *Arted. synon*. 94.

Racka. *Faun. suec*. No. 293.

THIS common fish is easily distinguished from the others by the rows of strong sharp spines, disposed along the back and tail. In a large one we saw, were three rows on the back, and five on the tail, all inclining towards its end.

On the nose, and on the inner side of the forehead near the eyes, were a few spines, and others were

were scattered without any order on the upper part of the pectoral fins.

The mouth was small, and filled with granulated teeth.

The upper part of the body was of a pale ash-color, marked with short streaks of black, and the skin rough, with small tubercles like shagreen.

The belly white, crossed with a strong semilunar cartilage beneath the skin: in general the lower part was smooth, having only a few spines on each side.

The young fish have very few spines on them, and their backs are often spotted with white, and each spot is encircled with black.

Food.

This species frequents our sandy shores, are very voracious, and feed on all sorts of flat fish, and are particularly fond of herrings and sand eels, and sometimes eat crustaceous animals such as crabs.

These sometimes weigh fourteen or fifteen pounds, but with us seldom exceed that weight.

They begin to generate in *June*, and bring forth their young in *July* and *August*, which (as well as those of the skate) before they are old enough to breed, are called *maids*. The thornback begins to be in season in *November*, and continues so later than skate, but the young of both are good at all times of the year.

VI. The

VI. The S T I N G R A Y.

- Τρυγών. Arist. Hist. an. lib. viii. c. 13. ix. 37. Oppian. pisc. 67.*
Halieut. l. 104. ii. 462. Fire Flaire. Raii syn. pisc. 24.
Pastinaca Plinii lib. ix. c. 42, 38. Raia Pastinaca. Lin. syst. 396.
La Pastenade de mer, Tourterelle, ou Tareronde. Belon. 83. Raia corpore glabro, aculeo longo anterieus serrato, cauda apterygia. Arted. synon. 100.
Pastinaca. Rondel. 331. Gesner pisc. 679. Gronov. Zooph. No. 158.
Steckroche. Grone Tepel. Schoonevelde, 58.

THE weapon with which nature hath armed this fish, hath supplied the antients with many tremendous fables relating to it. *Pliny, Ælian,** and *Oppian*, have given it a venom that affects even the inanimate creation: trees that are struck by it instantly lose their verdure and perish, and rocks themselves are incapable of resisting the potent poison.

The enchantress *Circe*, armed her son with a spear headed with the spine of the *Trygon*, as the most irresistible weapon she could furnish him with, and with which he afterwards committed parricide, unintentionally, on his father *Ulysses*.

That spears and darts might, in very early times, have been headed with this bone instead of iron, we have no kind of doubt: that of another species of this fish being still used to point the arrows of some of the *South American Indians*, and is, from its hardness, sharpness, and beards, a most dreadful weapon.

* *Hist. an. lib. ii. c. 36.*

But in respect to its venemous qualities there is not the least credit to be given to the opinion, tho' it was believed (as far as it affected the animal world) by *Rondeletius*, *Aldrovand*, and others, and even to this day by the fishermen in several parts of the kingdom. It is in fact the weapon of offence belonging to the fish, capable of giving a very bad wound, and which is attended with dangerous symptoms, when it falls on a tendinous part, or on a person in a bad habit of body. As to any fish having a spine charged with actual poison, we must deny our assent to it, tho' the report is sanctified by the name of *Linnaeus**.

Deser.

This species does not grow to the bulk of the others: that which we examined was two feet nine inches from the tip of the nose to the end of the tail; to the origin of the tail one foot three inches; the breadth one foot eight.

The body is quite smooth, of a shape almost round, and is of a much greater thickness, and more elevated form in the middle than any other *Rays*, but grows very thin towards the edges.

The nose is very sharp pointed, but short; the mouth small, and filled with granulated teeth.

The irides are of a gold color: behind each eye the orifice is very large.

* *Syst. Nat.* I. 348. He instances the *Passinaca*, the *Torpedo*, and the *Tetrodon lineatus*. The first is incapable of conveying a greater injury than what results from the meer wound. The second, from the vehemence of its shock: and the third, by imparting a pungent pain like the sting of nettles, occasioned by the minute spines on its abdomen.

The tail is very thick at the beginning: the spine Tail. is placed about a third the length of the former from the body, is about five inches long, flat on the top and bottom, very hard, sharp pointed; and the two sides thin, and closely and sharply bearded the whole way. The tail extends four inches beyond the end of this spine, and grows very slender at the extremity.

These fish are observed to shed their spine, and to renew them annually; sometimes the new spine appears before the old one drops off, and the *Cornish* call this species *Cardinal Trilost*, or three tailed, when so circumstanced.

The colour of the upper part of the body is a dirty yellow, the middle part of an obscure blue; the lower side white, the tail and spine dusky.

Genus VI. Slender body growing less towards the tail.
 Two fins on the back.
 Rough skin.
 Five apertures on the sides of the neck.
 Mouth, generally placed far beneath the end of the nose.
 The upper part of the tail longer than the lower.

SHARKS.

* Without the anal fin.

I. The A N G E L F I S H.

Plin. <i>Arist. Hist. an. lib. v. c.</i>	<i>pisc. 899. Wil. Ictb. 79.</i>
5, &c. <i>Athenæus, lib. vii. p.</i>	Monk, or Angel Fish. <i>Raii syn.</i>
319.	<i>pisc. 26.</i>
<i>Oppian Halient. I. 388, 742.</i>	<i>Squalus squatina. Lin. syst.</i>
<i>Squatina Plin. lib. ix. c. 12.</i>	398. <i>S. pinna ani nulla,</i>
<i>Rhina, sc. Squatus. lib. xxxii.</i>	<i>caudæ duabus, ore termina-</i>
<i>c. 11.</i>	<i>li, naribus cirrosis. Ibid.</i>
<i>L'Ange, ou Angelot de mer.</i>	<i>Sq. pinna ani carens, ore in</i>
<i>Belon. 69.</i>	<i>apice capitis. Arted. syn. 95.</i>
<i>Squatina. Rondel. 367. Gesner.</i>	<i>Gronov. Zooph. No. 151.</i>

THIS is the fish which connects the genus of rays and sharks, partaking something of the character of both; yet in an exception to each in the situation of the mouth, which is placed at the extremity of the head.

It is a fish not unfrequent on most of our coasts, where it prowls about for prey like others of the kind. It is extremely voracious, and, like the ray, feeds

feeds on flounders and flat fish, which keep at the bottom of the water, as we have often found on opening them. It is extremely fierce and dangerous to be approached. We knew an instance of a fisherman, whose leg was terribly tore by a large one of this species, which lay within his nets in shallow water, and which he went to lay hold of incautiously. Fierceness.

The aspect of these, as well as the rest of the genus, have much malignity in them: their eyes are oblong, and placed lengthways in their head, sunk in it, and overhung by the skin, and seem fuller of malevolence than fire.

Their skin is very rough; the ancients made use of it to polish wood and ivory*, as we do at present that of the greater dog-fish. The flesh is now but little esteemed on account of its coarseness and rankness, yet *Archestratus* (as quoted by *Athenæus*, p. 319) speaking of the fish of *Miletus*, gives this the first place in respect to its delicacy of the whole cartilaginous tribe.

They grow to a great size; we have seen them of near an hundred weight. Descr.

The head is large, the teeth broad at their base, but slender and very sharp above, and disposed in five rows all round the jaws. Like those of all sharks, they are capable of being raised or depressed by means of muscles uniting them to the jaws, not being lodged in sockets as the teeth of cetaceous fish are.

* *Qua lignum et eborā poliuntur. Plinii lib. ix. c. 12.*

The tongue is large; the eyes small; the pupil of a pale green; the irides white, spotted with brown: behind each eye is a semilunar orifice.

The back is of a pale ash-color, and very rough; along the middle is a prickly tuberculated line: the belly is white and smooth.

The pectoral fins are very large, and extend horizontally from the body to a great distance; they have some resemblance to wings, so writers have given this the name it bears in this work.

The ventral fins are placed in the same manner, and the double penis is placed in them, which forms another character of the males in this and the last genus.

The tail is bifurcated, the upper lobe rather the longest: not very remote from the end on the back are two fins.

II. The PICKED DOG FISH.

ἀκανθίας γαλέος. <i>Arist. Hist. an. lib. vi. c. 10. Oppian Halieut. I. 380.</i>	The picked dog, or hound fish. <i>Raii syn. pisc. 21.</i>
Επινωτίς <i>Athenæi lib. vii. p. L'Esquillats. Belon. 61.</i>	<i>Squalus spinax. Lin. syst. 397.</i>
<i>Galeus acanthias. Rondel. 373. Gesner. pisc. 607.</i>	<i>Sq. pinna ani nulla, dorsa- libus spinosis, corpore tere- tiusculo. Ibid.</i>
<i>Sperhaye, Dornhundert. Schone- velde, 29.</i>	<i>Sq. pinna ani nulla, corpore subrotundo. Arted. synon. 94.</i>
<i>Galeus acanthias five spinax. Wil. Ictb. 56.</i>	<i>Hai. Faun. suec. No. 295. Gro- nov. Zooph. 149.</i>

THE picked dog fish takes its name from a Name.
strong and sharp spine placed just before each
of the back fins, distinguishing it at once from the
rest of the *British* sharks.

The nose is long, and extends greatly beyond the Deser.
mouth, but is blunt at the end.

The teeth are disposed in two rows, are small and
sharp, and bend from the middle of each jaw to-
wards the corners of the mouth.

The first back fin is placed nearer the head than
the tail; the other is situated very near the latter.

The tail is finned for a considerable space beneath,
and the upper part is much the longest.

The back is of a brownish ash-color; the belly
white.

It grows to the weight of about twenty pounds.

III. The BASKING SHARK.

Sun-fish. *Smith's Hist. Cork*, ii. 292. *Hist. Waterford*, 271.

THIS species has been long known to the inhabitants of the south and west of *Ireland*, and those of *Caernarvonshire* and *Anglesea*; but having never been considered in any other than a commercial view, has till this time remained undescribed, at least by any *English* writer*; and what is worse, mistaken for and confounded with the *luna* of *Rondeletius*, the same that our *English* writers call the *sun-fish*.

The *Irish* and *Welsh* give it the same name, from its lying as if to sun itself on the surface of the water; and for the same reason we have taken the liberty of calling it the basking shark. It was long taken for a species of whale, till we pointed out the branchial orifices on the sides, and the perpendicular site of the tail.

These are migratory fish, or at least it is but in a certain number of years that they are seen in multitudes on the *Welsh* seas, tho' in most summers a single and perhaps strayed fish appears.

* *Linnaeus*, p. 400. mentions a species, which in size, and in some other respects, resembles this; but his differs in having a small anal fin. It is his *Squalus maximus*. *S. dentibus caninis*, *pinna dorsali anteriore majore*. He says it inhabites the *arctic* seas, and feeds on *medusæ* (sea jellies) that it rivals the whale in size, has no orifice near the eyes, and has a small anal fin.

They

They visited the bays of *Caernarvonshire* and *Anglesea* in vast shoals, in the summers of 1756*, and a few succeeding years, continuing there only the hot months, for they quitted the coast about *Michaelmas*, as if cold weather was disagreeable to them.

They had nothing of the fierce and voracious nature of the shark kind, and were so tame as to suffer themselves to be stroked: they generally lay motionless on the surface, commonly on their bellies, but sometimes, like tired swimmers, on their backs.

Their food seemed to consist entirely of sea plants, no remains of fish being ever discovered in the stomachs of numbers that were cut up, except some green stuff, the half digested parts of algæ, and the like. Food.

At certain times they were seen sporting on the waves, and leaping with vast agility several feet out of the water.

Their length was from three to eleven yards, but the last was a rare size.

Their form was rather slender, like others of the shark kind.

The upper jaw was much longer than the lower, and blunt at the end. The mouth placed beneath, and each jaw furnished with numbers of small teeth; those before were much bent, those more remote in the jaws, were conic and sharp pointed. Teeth.

On the sides of the neck were five large transverse apertures to the gills.

* Some old people say they recollect the same sort of fish visiting these seas in vast numbers about forty years ago.

On the back were two fins ; the first very large, not directly in the middle of the back, but rather nearer the head ; the other small, and situated near the tail. On the lower part were four others, viz. two pectoral fins, and two ventral fins ; the last placed just beneath the hind fin of the back. Near these the male had two genitals, and between these fins was situated the pudendum of the female.

The tail was very large, and the upper part remarkably longer than the lower.

The color of the upper part of the body was a deep leaden ; the belly white.

The skin was rough, like shagreen, but less so on the belly than the back.

Within side the mouth, towards the throat, was a very short sort of whalebone.

Liver. The liver was of a great size, but that of the female was the largest; some weighed above a thousand pounds, and yielded a great quantity of pure and sweet oil, fit for lamps, and also much used by the people who took them, to cure bruises, burns, and rheumatic complaints. A large fish has afforded to the captors a profit of twenty pounds. They were viviparous, a young one about a foot in length being found in the belly of a fish of this kind.

Oil.

They were taken with harpoons with long lines fixed to them in much the same manner as whales are, and when struck go off with vast rapidity, and dart instantly to the bottom, taking with them forty or fifty fathom of line, and are a long time before they are quite subdued.

The

The fishers observed on them a sort of leech of a reddish color, and about two feet long, but which fell off when the fish was brought to the surface of the water, and left a white mark on the skin.

The same persons assert, that there were two species of this fish; a lesser sort, about two yards in length, which had in the mouth only three rows of teeth, and those larger than in the kind we have described, being an inch and an half long.

This account we digested from materials furnished by the Rev. Mr. *Farrington*, and the Rev. Mr. *Williams*, Rector of *Lanvair yn Hornwy*, in *Anglesea*; for it has not been our fortune to see more of this fish than fragments of the skin, jaws, and what is styled whalebone: they have now in a manner quitted the coasts, scarce one in a summer appearing in those seas.

** With the anal fin.

IV. The W H I T E S H A R K.

Λαμία? *Arist. Hist. an. lib. v.*
c. 5. ix. c. 37.

Λάμνη. *Oppian Halieut. I.* 370.
v. 36.

Καρχαρίας Κυν. *Athen. lib.*
vii. p. 310.

Lamia? *Plinii lib. ix. c. 24.*

Le chien carcharien ou Perlz
fisch de Norvege. *Belon. 52.*
87.

Lamia. Tiburo. *Rondel. 489.*
390.

Canis Carcharias. *Gesner pisc.*
173.

White Shark. *Wil. Ictb. 47.*
Raii syn. pisc. 18.

Squalus carcharias. *Sq. dorso*
plano dentibus ferratis. Lin.
synt. 400.

Arted. synon. 89. Gronov. Zooph.
No. 143.

Size.

THIS grows to a very great bulk, *Gillius* says, to the weight of four thousand pounds; and that in the belly of one was found a human corps entire, which is far from incredible, considering their vast greediness after human flesh.

They are the dread of the sailors in all hot climates, where they constantly attend the ships in expectation of what may drop overboard; a man that has that misfortune perishes without redemption: they have been seen to dart at him, like gudgeons to a worm. A master of a *Guinea* ship informed me, that a rage of suicide prevailed among his new bought slaves, from a notion the unhappy creatures had, that after death they should be restored again to their families, friends, and country. To convince them at least that they should not re-animate their bodies, he ordered one of their corpses to be tied by
the

the heels to a rope, and lowered into the sea, and tho' it was drawn up again as fast as the united force of the crew could be exerted, yet in that short space the sharks had devoured every part but the feet, which were secured at the end of the cord.

Swimmers very often perish by them; sometimes they lose an arm or leg, and sometimes are bit quite assunder, serving but for two morsels for this ravenous animal: a melancholy tale of this kind is related in a *West India* ballad, preserved in Mr. *Percy's* reliques of ancient *English* poetry*.

The mouth of this fish is furnished with (some- Teeth, times) a sixfold row of teeth, flat, triangular, exceedingly sharp at their edges, and finely ferrated. We have one that is rather more than an inch and an half long. *Grew*** says, that those in the jaws of a shark two yards in length, are not half an inch, so that the fish to which mine belonged must have been six yards long, provided the teeth and body keep pace in their growth†.

This dreadful apparatus, when the fish is in a state of repose, lie quite flat in the mouth, but when he seizes his prey, he has power of erecting them, by the help of a set of muscles that join them to the jaw.

The mouth is placed far beneath, for which reason these, as well as the rest of the kind, are said to

* *Vol. I. 331.*

** *Rarities, 91.*

† Fossil teeth of this fish are very frequent in *Malta*, some of which are four inches long.

be obliged to turn on their backs to seize their prey, which is an observation as antient as the days of *Pliny**.

The eyes are large; the back broad, flat, and shorter than that of other sharks. The tail is of a femilunar form, but the upper part is longer than the lower. It has vast strength in the tail, and can strike with great force, so that the sailors instantly cut it off with an axe as soon as they draw one on board.

The pectoral fins are very large, which enables it to swim with great swiftness.

The color of the whole body and fins is a light ash.

The antients were acquainted with this fish; and *Oppian* gives a long and entertaining account of its capture. Their flesh is sometimes eaten, but is esteemed both coarse and rank.

V. The BLUE SHARK.

Γλαυκός. *Ælian. an. lib. I. c. 16.* Squalus fossula triangulari in extremo dorso, foraminibus nullis ad oculos, *Arted. syn. 98.*
Galeus glaucus. Rondel. 378.
Gesner pisc. 609.
 Blew shark. *Wil. Ichth. 49.* Squalus glaucus. *Lin. syst. 401.*
Raii syn. pisc. 20.

ÆLIAN relates strange things of the affection this species bears to its young: among others, he says, that it will permit the small brood, when in danger, to swim down its mouth, and take shel-

* *Omnia autem carnivora sunt talia et supina vescantur. lib. ix. c. 24.*

ter in its belly. This fact has been since confirmed by the observation of one of our best ichthyologists*, and is no more incredible, than that the young of the *Opossum* should seek an asylum in the ventral pouch of its parent, a fact too well known to be contested. But this degree of care is not peculiar to the blue shark, but we believe common to the whole genus.

This species frequents many of our coasts, but particularly those of *Cornwall* during the pilchard season, and is at that time taken with great iron hooks made on purpose.

It is of an oblong form : the nose extends far Descr. beyond the mouth : it wants the orifices behind the eyes, which are usual in this genus : the nostrils are long, and placed transversely. *Artedi* remarks a triangular dent in the lower part of the back.

The skin is smoother than that of other sharks; the back is of a fine blue color; the belly of a silvery white.

Linnæus says, that its teeth are granulated; for our part we must confess it is a fish that has not come under our examination, therefore hope to be favored with an accurate description from some Naturalist, who lives on the coast it haunts.

We may add, that *Rondeletius* says he was an eyewitness to its fondness for human flesh; that these fish are less destructive in our seas, is owing to the coolness of the climate, which is well known to abate the fierceness of some, as well as the venom of other animals.

* *Rondeletius*, 388.

VI. The S E A F O X.

- Αλωπεξ?* *Arist. Hist. an. lib.* *Cercus Carii opusc.* 110.
ix. c. 37. Ælian Var. Hist. *Sea Fox, or Ape. Wil. Ictb.* 54.
lib. I. c. 5. Raii syn. pisc. 20.
Oppian Halieut. I. 381. iii. 144. *Squalus cauda longiore quam*
Vulpes Plinii. lib. ix. c. 43. *ipsum corpus. Arted. syn.* 96.
Singe de mer. Belon. 88. *Sea Fox. Thresher. Borlase*
Vulpes marina. Rondel. 337. *Cornwall. 265.*
Gesner pisc. 1045:

Tail.

THIS fish is most remarkable for the great length of the tail: the whole measure of that we had an opportunity of examining, was thirteen feet, of which the tail alone was more than six, the upper part extending greatly beyond the lower, almost in a strait line.

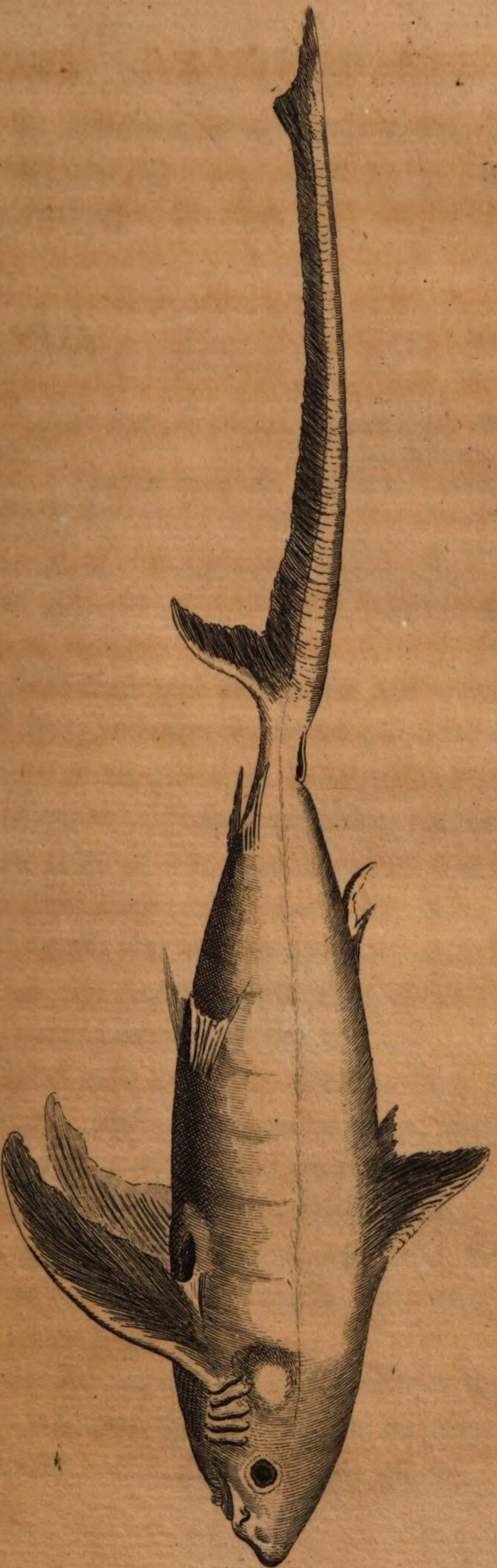
The body was round and short: the nose short but sharp pointed: the eyes large, and placed immediately over the corners of the mouth, which was small, and placed not very distant from the end of the nose.

The teeth are small for the size of the fish, and placed in three rows.

The back was ash-color; the belly white.

The antients styled this fish *Αλωπεξ*, and *Vulpes*, from its supposed cunning. They believed, that when it had the misfortune to have taken a bait, it swallowed the hook till it got at the cord, which it bit off, and so escaped.

They are sometimes taken in our seas, and have been imagined to be the fish called the *Thresher*, from



J. Parkinson del

J. Magell fecit

from its attacking and beating the *Grampus* with its long tail, whenever that species of whale rises to the surface to breathe.

VII. The T O P E.

Kuow? *Arist. Hist. an. lib. vi. c. 11.*

Canicula? *Plinii lib. ix. c. 46.*

Le chien de mer, ou Canicule.

Belon. 65.

Canis galeus. Rondel. 377.

Gesner pisc. 167.

The Tope. Wil Ictb. 51. Raii syn. pisc. 20.

Squalus naribus ori vicinis; foraminibus exiguis ad oculos. Arted. synon. 97.

Squalus galeus. Lin. syst. 399.

Gronov. Zooph. No. 142.

ONE that was taken on our coast the last year Size weighed twenty-seven pounds, and its length was five feet; but they grow to a greater size, some, according to *Artedius*, weighing an hundred pounds.

The color of the upper part of the body and fins was a light cinereous; the belly white.

The nose was very long, flat, and sharp pointed; beyond the nostrils semitransparent. The nostrils were placed very near the mouth.

Behind each eye was a small orifice. The teeth were numerous, disposed in three rows, small, very sharp, triangular, and ferrated on their inner edge.

The first back fin was placed about eighteen inches from the head; the other very near the tail.

The tail finned beneath, the upper part ended in a sharp angle.

This species is said by *Rondeletius* to be very fierce and voracious, even to pursue its prey to the edge of the shore.

Its skin and flesh has an offensive rank smell; therefore we suppose Mr. Dale gave it ironically the title of *Sweet William* *.

VIII. The GREATER DOG FISH.

- | | |
|-----------------------------------|-----------------------------------|
| Νεβρίας. Σκύλιος, Ασερίας? | Greater Cat fish : the Bounce. |
| Arist. Hist. an. lib. v. c. 10. | Raii syn. pisc. 22. |
| vi. c. 10, 11. | Squalus ex rufo varius, pinna |
| Ποικίλος? Oppian Halieut. l. 381. | ani medio inter anum et cau- |
| LaRouffete commune. Belon 65. | dem pinnatum. Arted. syn. |
| Canicula Aristotelis. Rondel. | 97. |
| 380. Gesner pisc. 168. | Squalus canicula. Lin. syst. 399. |
| Catulus major vulgaris. Wil. | Gronov. Zooph. No. 145. |
| Ictb. 62. | Greater Cat fish. Edw. 289. |

THIS species being remarkably spotted, may be the same known to antients by the names expressed in the synonyms; but they so frequently leave such slight notices of the animals they mention, that we are often obliged to add a doubtful mark (?) to numbers of them.

Descr.

The weight of one we took was six pounds three ounces, and yet it measured three feet eight inches in length; so light are the cartilaginous fish in respect to their size.

The nose was short, and very blunt, not extending above an inch and an half beyond the mouth. The nostrils were large, placed near the mouth, and covered with a large angular flap: the head very flat.

* Hist. Harwich, 420.

The eyes were oblong, behind each a large orifice opening to the inside of the mouth.

The teeth small, sharp, smooth at their sides, straight, and disposed in four rows.

Both the back fins were placed much behind, and nearer the tail than in common.

The tail was finned, and below extended into a sharp angle.

The color of the whole upper part of the body, and the fins, was brown, marked with numbers of large distinct black spots: some parts of the skin were tinged with red; the belly was white.

The whole was most remarkably round, and had a strong smell.

We think it is this species which furnishes what anglers call *Indian grass*, being the tendrils that issue from each end of the purse of this fish, which are much more delicate and slender than those of any other.

The female of this species, and we believe of other sharks, is greatly superior in size to the male; so that in this respect there is an agreement between the fish and the birds of prey*. They bring about nineteen young at a time: the fishermen believe that they breed at all times of the year, as they scarce ever take any but what are with young.

To this kind may be added, as a meer variety, the

Catulus maximus. Wil. Ictb. 63. Raii syn. pisc. 22.

Squalus cinereus, pinnis ventralibus discretis. Arted. syn. 97.

Squalus stellaris. Lin. syst. 399.

No. 145. Gronov. Zooph.

* Vide *British Zoology*, vol. I. 130.

The chief difference seeming to be in the color and the size of the spots; the former being grey, the latter fewer but larger than in the other.

IX. The LESSER DOG FISH.

Le muscarol ? *Belon.* 64.

Catulus minor, *Wil. Ich.* 64.

Lesser Rough Hound, or Mor-
gay. *Raii syn. pisc.* 22.

Squalus dorso vario, pinnis

ventralibus concretis. Arted.

synon. 97.

Squalus catulus. Lin. syst. 400.

Gronov. Zooph. No. 144.

THE weight of one that was brought to us by a fisherman was only one pound twelve ounces; the length two feet two inches: it is of a slender make in all parts.

The head was flat: the nostrils covered with a long flap: the nose blunt, and marked beneath with numerous small punctures: behind each eye was a small orifice: the back fins like those of the former, placed far behind.

The ventral fins are united, forming as if it were but one, which is a sure mark of this species.

The tail finned like that of the greater dog fish.

The color is cinereous, streaked in some parts with red, and generally marked with numbers of small black spots; but we have observed in some that they are very faint and obscure.

The belly is white.

This species breeds from nine to thirteen young at a time, are very numerous on some of our coasts, and very injurious to the fisheries.

X. The

X. The SMOOTH HOUND.

Γαλέος λείος? *Arist. Hist. an. lib. vi. c. 10. Oppian. lib. I. 380.* Smooth or unprickly hound.
Raii syn. pisc. 22.
Galeus lævis. Rondel. 375. Gesner pisc. 608. Squalus dentibus obtusis seu granulosis. *Arted. syn. 93.*
Mustelus lævis primus. Wil. 400. Gronov. Zooph. No. 142.
Ich. 60.

THIS species is called smooth, not that the skin is really so, but because it wants the spines on the back, which are the character of the second species, the Picked Dog.

The nose extends far beyond the mouth, and the end blunt: the holes behind the eyes are small; the back is less flat than that of others of this genus.

The first back fin is placed midway above the pectoral and ventral fins: the pectoral fins are small.

The tail forked, but the upper part is much the longest.

The teeth resemble those of a Ray, rough and sharp.

The color of the back and sides ash, and free from spots; the belly silvery.

XI. The P O R B E A G L E.

The Porbeagle. *Borlase Cornwall*, 265. tab. 26.

THE figure of this fish, engraved after a drawing by the Rev. Mr. *Jago**, is preserved in Doctor *Borlase*'s Natural History of *Cornwall*.

As it is not attended with any account farther than that it is a *Cornish* fish, and a small species of shark, we are obliged to form the best description we can from the print.

The nose appears to be very long, slender towards the end, and sharp pointed. The mouth placed far beneath; the body very thick and deep, but extremely slender, just at the setting on of the tail.

The first back fin is placed almost in the middle, the other pretty near the tail.

The belly very deep: the ventral and anal fins small.

The tail bifurcated; the upper fork a little longer than the lower.

* This gentleman was minister of *Loo*, in *Cornwall*, and appears to have been well acquainted with the History of Fish. He communicated figures of several of the *Cornish* fish, with a brief account of each to *Petiver*, at whose instance, as Doctor *Derham* tells us, in the preface to Mr. *Ray*'s Itineraries, p. 69, he added them to the Synopsis *Avium et piscium*, p. 162. A few others of his drawings are also preserved in the Natural History of *Cornwall*, and seem to be executed with skill and accuracy.

Genus

Genus VII. One aperture behind each ventral fin.

Large, flat, and circular head
and body.

Teeth numerous and small in the
jaws, roof of the mouth, and on the
tongue.

Pectoral fins broad and thick.

FISHING FROG.

I. The COMMON FISHING FROG.

<i>Βατραχος. Arist. Hist. an. lib.</i>	<i>Seheganfs, feheteuffel, fehete-</i>
<i>iv. c. 37. Oppian Halieut. ii.</i>	<i>tode. Schonevelde, 59.</i>
<i>86.</i>	<i>Toad-fish, Frog-fish, or Sea-</i>
<i>Rana piscatrix. Ovid. Halieut.</i>	<i>Devil. Wil. Ich. 85. Raii</i>
<i>126. Plinii lib. ix. c. 24.</i>	<i>syn. pisc. 29.</i>
<i>La Grenouille de mer, ou pes-</i>	<i>Lophius ore cirroso. Arted. syn.</i>
<i>cheuse. Le Diable de mer,</i>	<i>87.</i>
<i>Bauldroy & Pescheteau. Be-</i>	<i>Lophius piscatorius. Lyn. syst.</i>
<i>lon. 77.</i>	<i>402.</i>
<i>Rana piscatrix. Rondel. 363.</i>	<i>L. p. depressus capite rotundato.</i>
<i>Gesner pisc. 813.</i>	<i>Faun. suec. No. 298. Gronov.</i>
	<i>Zooph. No. 207.</i>

THIS singular fish was known to the antients Name.
by the name of *Βατραχος*, and *Rana*, and to
us by that of the fishing frog, for it is of a figure
resembling that animal in a tadpole state. *Pliny*
takes notice of the artifice used by it to take its
prey: *Eminentia sub oculis cornicula turbato limo exe-*
rit, assultantes pisciculos attrahens, donec tam prope
accedant, ut affiliat. “It puts forth the slender horns
“it has beneath its eyes, enticing by that means the

“ little fish to play round, till they come within
 “ reach, when it springs on them*.

Descr.

The fishing frog grows to a large size, some being between four and five feet in length; and we have heard of one taken near *Scarborough*, whose mouth was a yard wide. The fishermen on that coast have a great regard for this fish, from a supposition that it is a great enemy to the dog fish**, and whenever they take it with their lines, always set it at liberty.

It is a fish of very great deformity: the head is much bigger than the whole body, is round at the circumference, and flat above: the mouth of a prodigious wideness.

The under jaw is much longer than the upper: the jaws are full of slender sharp teeth: in the roof of the mouth are two or three rows of the same: at the root of the tongue, opposite each other, are two bones of an elliptical form, thick set, with very strong sharp teeth.

The nostrils do not appear externally, but in the upper part of the mouth are two large orifices that serve instead of them.

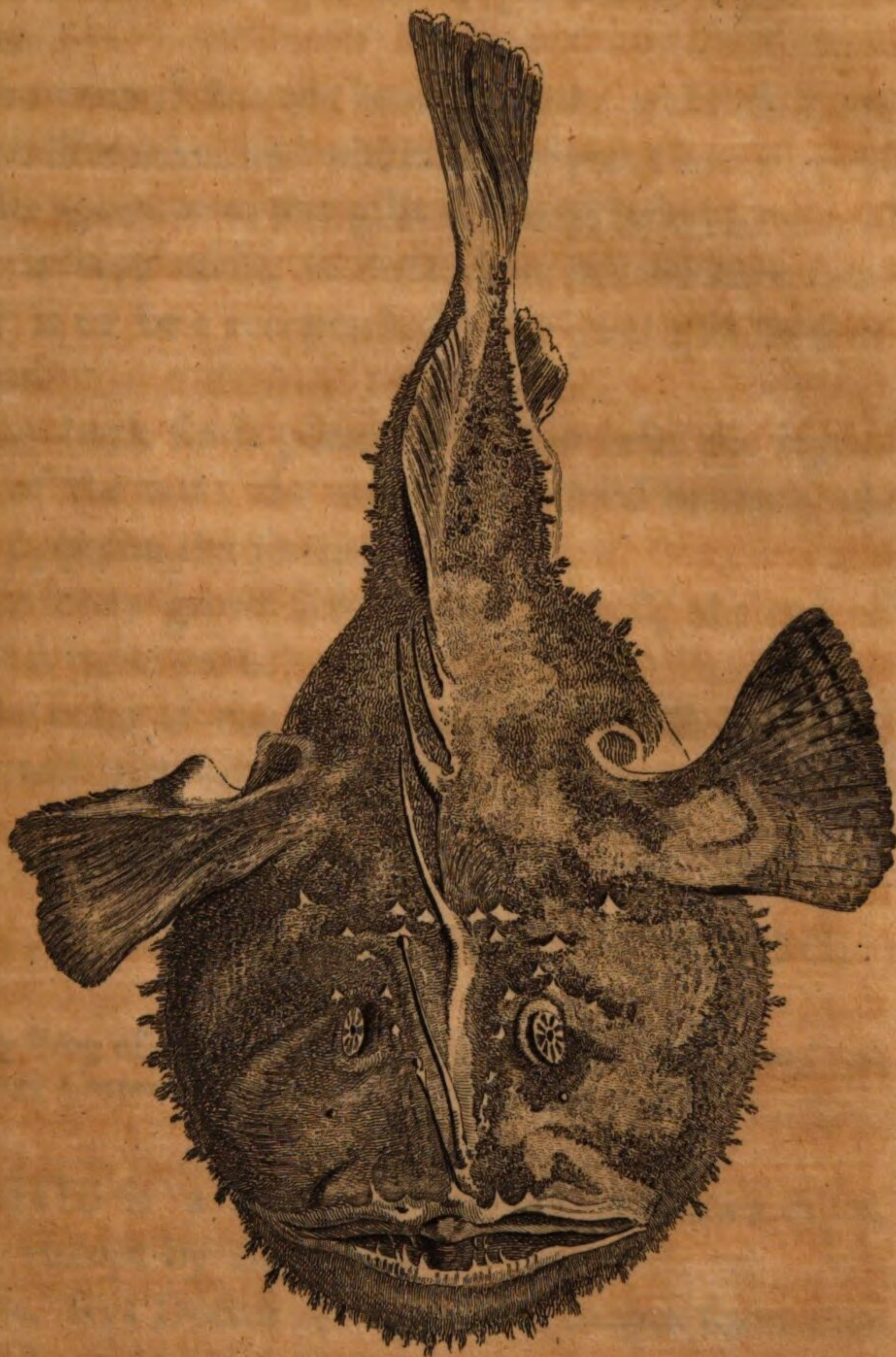
On each side the upper jaw are two sharp spines, and others are scattered about the upper part of the head.

Immediately above the nose are two long tough filaments, and on the back three others; these are

* *Cicero*, in his second of *De Natura Deorum*, gives much the same account of this fish: *Ranæ autem marinæ dicuntur obruere sese arena solere, et moveri propè aquam, ad quas, quasi ad escam, pisces cum accesserint, confici a ranis, atque consumi.*

** The bodies of these fierce and voracious fish are often found in the stomach of the *Fishing Frog*.

what



FISHING FROG.

Wat Williams del

P. Ma

what *Pliny* calls *cornicula*, and says it makes use of to attract the little fish.

Along the edges of the head and body are a multitude of short fringed skins, placed at equal distances.

The ventral fins are broad, thick, and fleshy, are jointed like arms, and within side divided into fingers.

The aperture to the gills is placed behind, each of these is very wide, so that some writers have imagined it to be a receptacle for the young in time of danger.

The back fin is placed very low near the beginning of the tail: the anal fin is placed beneath, almost opposite the former.

The body grows slender near the tail, the end of which is quite even.

The color of the upper part of this fish is dusky, the lower part white; the skin smooth.

II. The LONG FISHING FROG.

Fishing Frog of Mount's-Bay.
Borlase Cornwall, 266. tab.

27. fig. 6. *Phil. Trans.* vol.
liii. 170.

THIS is a species at present unknown to us, except by description.

It is, says Doctor *Borlase*, of a longer form than the common kind: the head more bony, rough, and aculeated. It had no fin like appendages round the head, but on each side the thinner part of the body, beginning beneath the dorsal fin, and reaching within

two

two inches of the tail, was a series of them, each three quarters of an inch in length.

At the end of the pectoral fins were spines an inch and three quarters in length; at the end of the tail others three quarters of an inch long.

Genus VIII. One narrow aperture on each side.

The mouth placed far below, tubular and without teeth.

The body long, and often angular.

STURGEON.

I. The S T U R G E O N.

- | | |
|--|--|
| Ὀνισκος. <i>Athen. lib. viii. 315.</i> | Schirk. <i>Kram. 383.</i> |
| Ἀκκιπησιος? <i>Athen. p. 294.</i> | Acipenser corpore tuberculis |
| Acipenser? <i>Plinii lib. ix. c. 17.</i> | spinosis exasperato. <i>Arted.</i> |
| <i>Ovidii Halieut?</i> | <i>syn. 91.</i> |
| L'Esturgeon, <i>Belon. 89.</i> | Acipenser sturio. <i>Lin. syst. 403.</i> |
| Acipenser. <i>Rondel. 410. Gesner</i> | <i>Mus. Ad. Fred. 54. tab. 18.</i> |
| <i>pisc. 2.</i> | <i>fig. 2.</i> |
| Sturio. <i>Gesner pisc.</i> | Stor. <i>Faun. suec. No. 299.</i> |
| Stoer. <i>Schonevelde. 9.</i> | <i>Seb. Mus. iii. 101. tab. 29.</i> |
| Sturgeon. <i>Wil. Ictb. 239. Raii</i> | <i>No. 19.</i> |
| <i>syn. pisc. 112.</i> | |

THAT this is the ὀνισκος of *Dorion*, as quoted by *Athenæus*, is very probable, as well from the account he gives of its form, as of its nature. He says its mouth is always open, with which it agrees with the sturgeon, and that it conceals itself in the hot months: this shews it to be a fish of a cold nature, which is confirmed by the history of the

the *European* fish of this species, given by Mr. *Forster**, in his Essay on the *Volga*, who relates that they are scarce ever found in that river in spring or summer, but in vast quantities in autumn and winter, when they crowd from the sea under the ice, and are then taken in great numbers.

Whether the *acipenser* is the sturgeon of the moderns, may be doubted, otherwise *Ovid* would never have spoke of it as a foreign fish :

Tuque peregrinis, Acipenser, nobilis undis.

And, thou, a fish in foreign seas renowned.

It being well known that it is not uncommon in the *Mediterranean*, and even in the mouth of the *Tiber*, at certain seasons ; but this passage leaves us as much in the dark as to the particular species intended, by the word *acipenser*, as the description *Pliny* has given us ; for that philosopher relates, that its scales are placed in a contrary direction to those of other fish, being turned towards the mouth, which disagrees with the character of all that are known at present. Whatever fish it might be, it was certainly the same with the *Elops*, or *Helops*, as appears both from *Pliny*, and another line of the poet before-mentioned :

Et pretiosus Helops nostris incognitus undis.

The pretious *Helops* stranger to our seas.

The sturgeon annually ascends our rivers, but in no great numbers, and is taken by accident in the

Migratory.

* *Phil. Trans.* lvii. 352.

salmon nets. It seems a spiritless fish, making no manner of resistance when entangled, but is drawn out of the water like a lifeless lump. It is a fish that is seldom taken far out at sea, but frequents such parts as are not remote from the æstuaries of great rivers. It is admired for the delicacy and firmness of its flesh, which is white as veal, and extremely good when roasted. It is generally pickled. The most we receive comes either from the *Baltic* rivers, or *North America*: those cured at *Pillau* have been, till of late, in the greatest repute; but thro' the encouragement given by the society instituted for promoting trade and manufactures, the sturgeon from our colonies begins to rival those of the *Baltic*.

Great numbers are taken during summer in the lakes *Frische-baff*, and *Curisch-baff* near *Pillau*, in large nets made of small cord. The adjacent shores are formed into districts, and farmed out to companies of fishermen, some of which are rented for six thousand guilders, or near three hundred pounds *per annum*.

They are found in vast abundance in the *American* rivers in *May*, *June*, and *July*, at which time they leap some yards out of the water, and falling on their sides, make a noise to be heard in still weather at some miles distance*.

Caviare.

Caviare is made of the roes of this, and also of all the other sorts of sturgeons, dried, salted, and packed up close. The best is said to be made of those of the *Sterlet***, a small species frequent in

* *Catesby Carol. App. 33.* ** *Strahlenberg's Hist. Russia, 337.*

the *Taik* and *Volga*. * *Icthyocolla*, or ising-glass, is also made of the *sound* of our fish, as well as that of the others, but the *Beluga* affords the best**.

The sturgeon grows to a great size, to the length of eighteen feet, and to the weight of five hundred pounds, but it is seldom taken in our rivers of that bulk. The largest we have known caught in those of *Great Britain* weighed four hundred and sixty pounds, which was taken about two years ago in the *Esk*, where they are more frequently found than in our southern waters. Descrip

The nose is very long, slender, and ends in a point. The eyes are extremely small; the nostrils placed near them: on the lower part of the nose are four cirri or beards: the mouth is situated far beneath, is small, and unsupported by any jaw bones; neither has it any teeth.

The body is long, pentagonal, and covered with five rows of large bony tubercles: one row of which is placed on the back, and two on each side. The whole under side of the fish, from the end of

* *Phil. Transf.* lvii. 354. a very small quantity is made from this species, and that only designed as presents to great men, as Mr. *Forster* assured me.

** The antients were acquainted with the fish that afforded this drug. *Pliny lib xxxii. c. 7.* mentions it under the name of *Icthyocolla*, and says, that the glue that was produced from it had the same title; and afterwards adds, that it was made out of the belly of the fish. The *Mario*, said by *Pliny lib. ix. c. 15.* to be found in the *Danube* and the *Borysthenes*, was certainly of this genus, a cartilaginous fish (*nullis ossibus spinisve interstitis*) resembling a small porpess (*Porcula marino similimus*;) and very probably may be the same with the *Beluga*, which, according to Mr. *Forster*, *Phil. Transf.* lvii. 354. has a short blunt nose, agreeing in that respect with the porpess.

the nose to the vent, is flat; on the back, not remote from the tail, is a single fin. It has besides two pectoral fins, two ventral and one anal fin. The tail is bifurcated, but the upper part much longer than the lower.

The upper part of the body is of a dirty olive color: the lower part silvery; the middle of the tubercles white.

In the manner of breeding it is an exception among the cartilaginous fish, being like the bony fish oviparous, spawning in winter.

Genus IX. A very deep body, and as if cut off in the middle.

Mouth small.

Two teeth only in each jaw.

SUN-FISH.

I. The OBLONG SUN-FISH.

Sun-Fish from Mount's-Bay. *Ostracion lævis*. Gronov. *Zooph.*
Borlase Cornwall, 268. tab. No. 185.
 26. fig. 7.

RONDELETIUS has given this genus the synonym of *Orthragoriscus*, as if it was that which *Pliny** intended by the same name; but the account left us by that Naturalist is so brief, that we do not think ourselves authorized to place it as

* *Lib. xxxii. c. 2.*

a synonymous creature. He says no more than that it was the greatest of fish, and that it grunted when it was first taken, from which probably rose the name, for according to *Athenæus*, ὀρθραγορίσκον*, was that given to a young pig. We are inclined to believe, that this fish had escaped the notice of *Pliny*, otherwise he must have unavoidably made some remark on its striking figure.

They grow to a very large size : one that was taken near *Plymouth* in 1734, weighing five hundred pounds. Size.

In form it resembles a bream, or some deep fish cut off in the middle. The mouth is very small, and contains in each jaw two broad teeth, with sharp edges. Descr.

The eyes are little ; before each is a small semi-lunar aperture ; the pectoral fins very small, and placed behind them. The dorsal fin, and the anal fin are high, and placed at the extremity of the body : the tail fin is narrow, and fills all the abrupt space between those two fins.

The color of the back is dusky, and dappled ; the belly silvery : between the eyes and the pectoral fins are certain streaks pointing downwards. The skin is free from scales.

When boiled, it has been observed to turn into a glutinous jelly, resembling boiled starch when cold, and served the purposes of glue, on being tried on paper and leather.

* *Lib. iv. p. 140.*

There seems to be no satisfactory reason for the *English* name, yet to prevent confusion from the multiplication of titles, we chuse to retain that it has been so long known by; but care must be taken not to confound it with the sun-fish of the *Irish*, which differs in all respects from this*.

II. The SHORT SUN-FISH.

Orthratoriscus five Luna piscis.
Rondel. 424.

Mola Salviani, the Sun-fish. *Wil.*
Ictb. 151. *Raii syn. pisc.* 51.

Ostracion cathetoplateus subro-
tundus inermis asper, pinnis
pectoralibus horizontalibus,
foraminibus quatuor in ca-
pite. Arted. synon. 83.

Tetraodon mola. T. lævis,
compressus, cauda truncata,
pinna brevissima dorsali ana-
lique annexa. Lin. syst. 412.
Gronov. Zooph. No. 186.

Sun-fish, from Loo. *Borlase.*
Cornwall. 267. *tab.* 26.
fig. 6.

THIS differs from the former in being much shorter and deeper. The back and the anal fins are higher, and the aperture to the gills not semilunar, but oval. The situation of the fins are the same in both.

This species was taken off *Penzance*, and is engraved in Doctor *Borlase's* Natural History of *Cornwall*, from one of Mr. *Jago's* drawings. Both kinds are taken on the western coasts of this kingdom, but in much greater numbers in the warmer parts of *Europe*.

* *Vide p.* 78.

Genus X. Thick body, arched back.

Ventral fins united.

Four branchiostegous rays.

LUMP FISH.

Lumpus anglorum. *Gesner Paralip.* 25.

Seehaefs, Haffpodde. *Schonevelde.* 41.

Lump, or Sea-Owl, *Scotis* Cock paddle. *Wil. Ichth.* 208. *Raii syn. pisc.* 77.

Cyclopterus. *Arted. synon.* 87.

Gronov. Zooph. No. 197.

Cyclopterus Lumpus. *C. corpore squamis ossibus angulato.* *Lin. syst.* 414.

Sjurygg-fisk, Stenbit, Quabb-su. Faun. suec. No. 320.

I. The L U M P F I S H.

THIS singular fish encreases to the weight of four pounds, and the length of sixteen inches: the shape of the body is like that of the bream, deep but very thick, and it swims edgeways. The back is sharp and elevated, the belly flat.

The irides are of a cherry color; lips, mouth, and tongue, of a deeper red: the jaws lined with innumerable small teeth; the tongue very thick; along the ridge of the back is a row of large bony tubercles; from above the eye to within a small space of the tail is another row; beneath that a third, commencing at the gills; and on each side the belly a fourth row, consisting of five tubercles like the other: the whole skin is rough, with small tubercles.

H

On

On the lower part of the back is a thick knob, improperly called a fin, being destitute of spines; beneath that is the dorsal fin, of a brownish hue, reaching within an inch of the tail: on the belly, just opposite, is another of the same form. The belly is of a bright crimson color: the pectoral fins are large and broad, almost uniting at their base. Beneath these is the part by which it adheres to the rocks, &c. It consists of an oval aperture, surrounded with a fleshy muscular and obtuse soft substance, edged with small threaded appendages, which concur as so many clasps: tail and vent fins purple.

By means of this part it adheres with vast force to any thing it pleases. As a proof of its tenacity we have known, that on flinging a fish of this species just caught, into a pail of water, it fixed itself so firmly to the bottom, that on taking the fish by the tail, the whole pail by that means was lifted, tho' it held some gallons, and that without removing the fish from its hold.

Great numbers of these fish are found in the *Greenland* seas during the months of *April* and *May*, when they resort near the shore to spawn. Their roe is remarkably large, which the *Greenlanders* boil to a pulp, and eat. They are extremely fat, which recommends them the more to the natives, who admire all oily food: they call them *Nipisets*, or *Catfish*, and take quantities of them during the season*.

This fish is sometimes eaten in *England*, being stewed like carp, but is both flabby and insipid.

* *Crantz's Hist. Greenland*, I. 96.

II. The SEA SNAIL.

- | | |
|---|--|
| Liparis? <i>Rondel.</i> 272. <i>Gesner</i> | <i>Cyclopterus Liparis.</i> C. cor- |
| <i>pisc.</i> 483. | pore nudo, pinnis dorsali |
| Liparis nostras <i>Dunelm et Eborac.</i> | anali caudalique unitis. <i>Lin.</i> |
| <i>Sea Snail. Wil. Ictb. App.</i> 17. | <i>syst.</i> 414. |
| <i>Raii syn. pisc.</i> 74. <i>Pet. Gaz.</i> | <i>Cyclogaster. Gronov. Zooph. Na.</i> |
| <i>tab.</i> 51. <i>fig.</i> 5. | 198. |
| Liparis. <i>Arted. synon.</i> 117. | |

THE sea snail takes its name from the soft and unctuous texture of its body, resembling that of the land snail. It is almost transparent, and soon dissolves and melts away.

It is found in the sea near the mouths of great rivers.

The length is five inches: the color when fresh taken a pale brown: the shape of the body round, but near the tail compressed sideways: the belly is white, and very protuberant. Descr.

The head is large, thick, and round. There are no teeth in the mouth, but the jaws are very rough: the tongue very large.

The orifice to the gills is very small.

The pectoral fins are very broad, thin, and transparent, and almost unite under the throat. The first ray next the throat is very long, extends far beyond the rest, and is as fine as a hair. Over the base of each is a sort of operculum, or lid, ending in a point: this is capable of being raised or depressed at pleasure.

Behind the head begins the dorsal fin, which extends quite to the end of the tail: the ventral fin begins at the anus, and unites with the other at the tail.

Beneath the throat is a round depression of a whitish color, like the impression of a seal, surrounded by twelve small pale yellow tubera, by which it is probable it adheres to the stones like the other species.

Genus XI. Nose long and tubular.

No orifice to the gills:

The breathing aperture on the hind part of the head.

No ventral fins.

The body covered with a strong crust.

PIPE FISH.

I. The LONGER PIPE FISH.

Acus Aristotelis caudâ serpentina. *Sib. Scot.* 24. *tab.* 19.

Typhle altera. *Gesner pisc.* 1025.

Syngnathus corpore quadrangulo, pinnâ caudæ carens?

Arted. Spec. 3.

Syngnathus barbarus. S. pinnis caudæ anique nullis, corpore sexangulato? *Lin. syst.* 417.

THIS species, described by Sir *Robert Sibbald*, was two feet in length; that we examined only sixteen inches.

The nose was an inch long, compressed sideways, and the end of the lower mandible turned up: the aperture of the mouth was very small.

The

Spr.



PIPE FISH.

1.



2.



3.



J. Magell del & sculp

The irides were red ; behind each eye was a deep brown line.

The body, in the thickest part, was about equal to a swan's quill, and angular ; but the angles not being very sharp, they were not easily seen till the fish was dried : the belly was slightly carinated, and marked along the middle with a dusky line.

The general color of the fish was an olive brown : the sides marked with numbers of bluish lines pointing from the back to the belly, which, in dried fish, seemed like the signs of so many joints. Those in a fresh subject ceased beyond the vent ; all beyond that was spotted with brown.

The dorsal fin was narrow and thin, consisting of thirty-eight rays, was two inches long, and placed rather nearer to the head than the tail.

The vent was seven inches from the tip of the nose ; the body to that orifice was of an equal thickness, but from thence tapered to a very small point, having no mark of a fin.

The pectoral fins were also wanting ; in short, all except the back fin.

When this fish and the next species are dried, they appear covered with numbers of angular crusts, finely radiated from their centre.

They are viviparous ; for on crushing one that was just taken, hundreds of very minute ones were observed to crawl about.

As we want a generical name in our language for this genus, we call it the *Pipe Fish*, from its slender body.

II. The SHORTER PIPE FISH.

L'Orueul marin. *Belon*. 446.

Acus secunda species, five,

acus *Aristotelis*. *Rondel*. 229.Typhle. *Gesner pisc*. 1025.

Trummer, Meherschlange.

Schonevelde, 11.Acus *Aristotelis* seu secunda.*Wil. Ichth*. 158. *Raii syn. pisc*.

47.

Syngnathus corpore medio hep-

tagono, caudâ pinnatâ. *Ar-*
ted. synon. 2.Syngnathus acus. S. pinnis
caudæ ani pectoralibusque
radiatis, corpore septem-an-
gulato. *Lin. syst*. 416.*Kantnahl. Faun. suec*. No. 376.

Syngnathus cauda pinnata.

Gronov. Zooph. No. 172.Sea-adder. *Borlase Cornw*. 267.

THIS is shorter and thicker than the former, not exceeding twelve inches in length. The middle of the body in some is hexangular, in others heptangular. *Linnaeus* constitutes two species of them, his *Syngnathus Typhle*, and his *Syngnathus Acus*; but we join with Doctor *Gronovius*, in thinking them only varieties of the same fish.

The mouth is formed like that of the former: the irides are yellow: close behind the head are the pectoral fins, which are small and short.

On the lower part of the back is one narrow fin; beyond the vent the tail commences, which is long and quadrangular.

At the extremity is a fin round and radiated.

The body is covered with a strong crust, elegantly divided into small compartments.

The belly is white; the other parts brown.

Besides these species of hard-skinned Pipe fish, we have been informed, that the *Syngnathus Hippocampus* of *Linnaeus*, or what the *English* improperly call the sea horse, has been found on the southern shores of this kingdom.

III. The

III. The LITTLE PIPE FISH.

Acui *Aristotelis* congener pisci-
culus, pueris cornubiensibus
Sea Adder, *Acus Lumbrici-*
formis, aut *Serpentinus*. *Wil.*
Ictb. 160. *Raii syn. pisc.*
Syngnathus teres, pinnis pecto-

ralibus caudaque carens. *Ar-*
ted. synon. 2.
Syngnathus ophidion, *Lin. syst.*
417.
Hafsnahl, Tangsnipa. Faun.
suec. No. 375,

THE little pipe fish seldom exceeds five inches in length, is very slender, and tapers off to a point. It wants both the pectoral and tail fins; is covered with a smooth skin, not with a crust as the two former kinds are.

The nose is short and turns a little up; the eyes prominent.

On the back is one narrow fin.

This species is not viviparous: on the belly of the female is a long hollow, to which adhere the eggs, disposed in two or three rows, are large, and not numerous.

Doctor *Gronovius* makes this synonymous with the fish described by Sir *Robert Sibbald*, possibly from not having an opportunity of comparing them. To shew their differences the more strongly, we have caused both species to be engraved in the same plate, and also the two varieties of our second species.

The synonym of *Serpent* is used in several languages to express these fish: the *French* call one species *Orueul*, from a sort of snake not unlike the blindworm: the *Germans* call it *Meberschlange*; and the *Cornish*, the sea adder.

Div. III. BONY FISH.

Sect. I. APODAL.

Genus XII. Body, long, slender, and slippery.
 Nostrils tubular.
 Back, ventral, and tail fins, united.
 Aperture to the gills small, and
 placed behind the pectoral fins.
 Ten branchiostegous rays. EEL.

I. The E E L.

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|--|---------------------------------------|
| <i>Eγχιλος. Arist. Hist. an. lib.</i> | <i>The Eel. Wil. pisc. 109. Raii</i> |
| <i>iv. c. 11. vi. 14. 16. Oppian</i> | <i>syn. pisc. 37.</i> |
| <i>Halieut. I. 516. iv. 450.</i> | <i>Muraena unicolor maxilla in-</i> |
| <i>Anguilla Plinii lib. ix. c. 21.</i> | <i>feriore longiore. Arted. syn.</i> |
| <i>L'Anguille. Belon. 291. Obs.</i> | <i>39.</i> |
| <i>55.</i> | <i>Muraena anguilla. Lin. syst.</i> |
| <i>Anguilla. Rondel. fluv. 198.</i> | <i>426. Gronov. Zooph. No. 166.</i> |
| <i>Gesner pisc. 40.</i> | <i>Ahl. Faun. suec. No. 301. Aal.</i> |
| <i>Ael. Schonevelde, 14.</i> | <i>Kram. 387.</i> |

THE eel is a very singular fish in several things that relate to its natural history, and in some respects borders on the nature of the reptile tribe.

It is known to quit its element, and during night to wander along the meadows, not only for change

change of habitation, but also for the sake of prey, feeding on the snails it finds in its passage.

During winter it beds itself deep in the mud, and continues in a state of rest like the serpent kind. It is very impatient of cold, and will eagerly take shelter in a whisp of straw flung into a pond in severe weather, which has sometimes been practised as a method of taking them. *Albertus** goes so far as to say, that he has known eels to take shelter in a hay-rick, yet all perished thro' excess of cold.

It has been observed, that in the river *Nyne*** there is a variety of small eel, with a lesser head and narrower mouth than the common kind, that is found in clusters in the bottom of the river, and is called the *Bed-eel*: these are sometimes rouzed up by violent floods, and are never found at that time with meat in their stomachs. This bears such an analogy with the clustering of blindworms in their quiescent state, that we cannot but consider it as a further proof of a partial agreement in the nature of the two genera.

Genera-
tion.

The antients adopted a most wild opinion about the generation of these fish, believing them to be either created from the mud, or that the scrapings of their bodies which they left on the stones, were animated and became young eels. Some moderns gave into these opinions, and into others that were equally extravagant. They could not account for

* *Gesner pisc.* 45.

** *Morton's Hist. Northampt.* 419, *Pliny* observes, that the eels of the lake *Benacus* collect together in the same manner in the month of *October*, possibly to retreat from the winter's cold. *lib. ix. c. 22.*

the

the appearance of these fish in ponds that never were stocked with them, and that were even so remote as to make their being met with in such places a phenomenon that they could not solve. But there is much reason to believe, that many waters are supplied with these fish by the aquatic fowl of prey, in the same manner as vegetation is spread by many of the land birds, either by being dropped as they carry them to feed their young, or by passing quick thro' their bodies, as is the case with herons; and such may be occasion of the appearance of these fish in places where they were never seen before. As to their immediate generation, it has been sufficiently proved to be effected in the ordinary course of nature, and that they are viviparous.

Viviparous.

They are extremely voracious, and very destructive to the fry of fish.

No fish lives so long out of water as the eel: it is extremely tenacious of life, as its parts will move a considerable time after they are flayed and cut into pieces.

The eel is placed by *Linnaeus* in the genus of *Muraena*, his first of the apodal fish, or such which want the ventral fins. Descr.

The eyes are placed not remote from the end of the nose: the irides are tinged with red: the under jaw is longer than the upper: the teeth are small, sharp, and numerous: beneath each eye is a minute orifice: at the end of the nose two others, small and tubular.

This

This fish is furnished with a pair of pectoral fins, rounded at their ends. Another narrow fin on the back, uniting with that of the tail; and the anal fin joins it in the same manner beneath.

Behind the pectoral fins is the orifice to the gills, which are concealed in the skin.

Silver
Eels.

Eels vary much in their colors, from a sooty hue to a light olive green; and those which are called silver eels, have their bellies white, and a remarkable clearness throughout.

Grigs.

Besides these there is another variety of this fish known in the *Thames* by the name of *Grigs*, and about *Oxford* by that of *Grigs* or *Gluts*. These are scarce ever seen near *Oxford* in the winter, but appear in spring, and bite readily at the hook, which common eels in that neighborhood will not. They have a larger head, a blunter nose, thicker skin, and less fat than the common sort; neither are they so much esteemed, nor do they often exceed three or four pounds in weight.

Common eels grow to a large size, sometimes so great as to weigh fifteen or twenty pounds, but that is extremely rare. As to instances brought by *Dale* and others, of these fish encreasing to a superior magnitude, we have much reason to suspect them to have been congers, since the enormous fish they describe, have all been taken at the mouths of the *Thames* or *Medway*.

The eel is the most universal of fish, yet is scarce ever found in the *Danube*, tho' it is very common in the lakes and rivers of *Upper Austria*.

The

The *Romans* held this fish very cheap, probably from its likeness to a snake :

Vos anguilla manet longæ cognata colubræ*,
Vernula riparum pinguis torrente cloaca.

For you, is kept a sink-fed snake-like eel.

On the contrary, the luxurious *Sybarites* were so fond of these fish, as to exempt from every kind of tribute the persons who sold them**.

II. The C O N G E R.

Κόνγρος. *Arist. Hist. an. lib.*
I. &c.

Γόνγρος. *Oppian Halieut. I.*
113. 521.

Conger. *Ovidii Halieut. 115.*
Plinii lib. ix. c. 16. 20.

Le Congre. *Belon. 159.*

Conger. *Rondel. 394. Gesner pisc.*
290.

The Conger, or Conger Eel.

Wil. Ictb. iii. Raii syn. pisc.
37.

Muraena supremo margine pin-
næ dorsalis nigro. *Arted.*
synon. 40.

Muraena Conger. M. rostro
tentaculis duobus, linea la-
terali ex punctis albida. *Lin.*
syst. 426.

THE conger grows to a vast size. Doctor *Bor-* Size
lase, to whom we are obliged for several in-
formations relating to this species, assure us, that
they are sometimes taken near *Mount's-Bay* of one
hundred pounds weight†.

They differ from the common eel in the follow- Descr.
ing particulars: 1. Their color in general is more
dark. 2. Their eyes much larger in proportion.

* *Juvenal. Sat. v. 103.*

** *Athenæus. lib. xii. p. 521.*

† We have heard of some taken near *Scarborough* that were
ten feet and a half long, and eighteen inches in circumference
in the thickest part.

3. The irides of a bright silvery color. 4. The lower jaw is rather shorter than the upper. 5. The side line is broad, whitish, and marked with a row of small spots; Mr. *Ray* says a double row, but we did not observe it in the fish we examined. 6. The edges of the dorsal and anal fins are black. 7. They have more bones than the common eel, especially along the back quite to the head. 8. They grow to a much larger size.

As to the distinction that Mr. *Ray*, and other writers, make of the small beards at the end of the nose, we think it not to be depended on, being sometimes found in both kinds, and sometimes entirely wanting.

We believe they generate like the fresh-water species: innumerable quantities, of what are supposed to be their fry, come up the *Severn* about the month of *April*, preceding the *Shads*, which it is conjectured migrate into that river to feed on them: they are called *Elvers*. They quite swarm during their season, and are taken in a kind of sieve made of hair-cloth, fixed to a long pole; the fisherman standing on the edge of the water during the tide, puts in his net as far as he can reach, and drawing it out again takes multitudes at every sweep, and will take as many during one tide as will fill a bushel. They are dressed, and reckoned very delicate.

Congers are extremely voracious, preying on other fish, and on crabs at the time they have lost their shell, and are in a soft state. They and eels in general are also particularly fond of carcases of any kind,

kind, being frequently found lodged in such that are accidentally taken up.

These fish are an article of commerce in *Cornwall*; numbers are taken on that coast, and exported to *Spain* and *Portugal*, particularly to *Barcelona*. The quantities that were sent from *Mount's-Bay* for five years, are as follow:

	Cwt.	qr.	lb.
1756	46	0	13
1757	164	0	21
1758	164	1	3
1759	213	0	3
1760	71	3	0

Some are taken by a single hook and line, but Capture. (because that way is tedious, and does not answer the expence of time and labor) they are chiefly caught by *Bulvers*, which are strong lines five hundred feet long, with sixty hooks, each eight feet asunder, baited with pilchards or mackrel: the *Bulvers* are sunk to the ground by a stone fastened to them: sometimes such a number of these are tied together as to reach a mile.

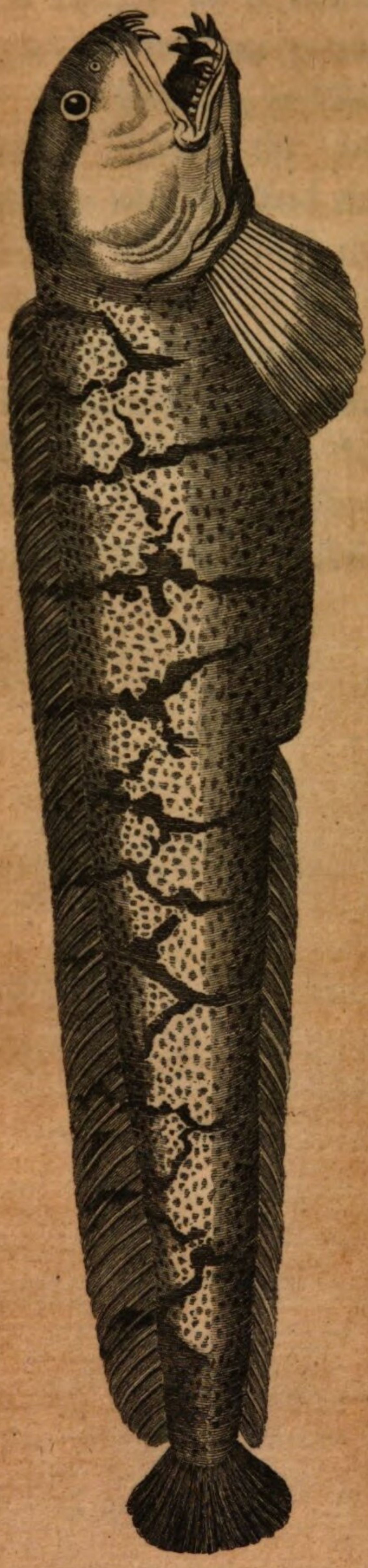
We have been told that the fishermen are very fearful of a large conger, least it should endanger their legs by clinging round them; they therefore kill them as soon as possible by striking them on the navel.

They are afterwards cured in this manner: they Cure. are slit, and hung on a frame till they dry, having a considerable quantity of fat, which it is necessary should

should exude before they are fit for use. It is remarkable that a conger of a hundred weight will waste by drying to twenty-four pounds; the people therefore prefer the smallest, possibly because they are soonest cured. During the process there is a considerable stench; and it is said that in the fishing villages the poultry are fed with the maggots that drop from the fish.

The *Portuguese* and *Spaniards* use those dried congers after they have been ground into a powder, to thicken and give a relish to their soups. We think they are sold for about forty shillings the quintal, which weighs one hundred and twenty-six pounds.

SEA WOLF.



P. Magell del. & sculp.

Genus XIII. Blunt head : long body.

One dorsal fin reaching
almost from the head to tail.

Fore teeth, conic and large.

Grinders flat and round.

WOLF FISH.

I. The WOLF FISH.

- | | |
|---|---|
| Anarrhichas. <i>Gesner Paralip.</i> 4. | Steen-bider. <i>Pontop. Norway.</i> |
| Lupus marinus <i>Caii opusc.</i> 113. | ii. 151. |
| Lupus marinus nostras, quem | Kigutilik <i>i. e.</i> dentatus. <i>Crantz.</i> |
| <i>incolæ Wolff. Schonevelde</i> 45. | <i>Greenl.</i> I. 96. |
| <i>tab.</i> 5. | Anarrhichas. <i>Arted. synon.</i> 39. |
| Cat-Fish. <i>Sib. Scot.</i> iii. 25. | Anarrhichas Lupus. <i>Lin. syst.</i> |
| <i>tab.</i> 16. | 430. |
| Wolf Fish, Sea Wolf, or Woof. | Zee Wolf. <i>Gronov. Mus. No.</i> |
| <i>Wil. Ictb.</i> 130. <i>Raii syn. pisc.</i> | 44. <i>Zooph. No.</i> 400. |
| 40. | |

THIS fish seems to be confined to the northern Place.
parts of the globe. We find it in the seas of
Greenland, in those of *Iceland** and *Norway*, on the
coasts of *Scotland*, and of *Yorkshire*, and lastly, in
that part of the *German* ocean, which washes the
shores of *Holland*, the most southern of its haunts
we can with any certainty mention.

It is a most ravenous and fierce fish, and when
taken fastens on any thing within its reach : the
fishermen dreading its bite, endeavor as soon as possi-

* Where it is called *Steinbeisser*. *Schonevelde*, 45.

ble to beat out its fore teeth, and then kill it by striking it behind the head. *Schonevelde* relates, that its bite is so hard that it will seize on an anchor, and leave the marks of its teeth in it; and the *Danish* and *German* names of *Steenbider* and *Steinbeisser*, express the sense of its great strength, as if it was capable of crushing even stones with its jaws.

Food.

It feeds almost entirely on crustaceous animals, and shell fish, such as crabs, lobsters, prawns, muscles, scollops, large whelks, &c. these it grinds to pieces with its teeth, and swallows with the lesser shells. It does not appear they are dissolved in the stomach, but are voided with the fœces, for which purpose the aperture of the anus is wider than in other fish of the same size.

It is full of roe in *February*, *March*, and *April*, and spawns in *May* and *June*.

This fish has so disagreeable and horrid an appearance, that nobody at *Scarborough* except the fishermen will eat it, and they prefer it to holibut. They always before dressing take off the head and skin.

Size.

The sea wolf grows to a large size: those on the *Yorkshire* coast are sometimes found of the length of four feet, and, according to Doctor *Gronovius*, have been taken near *Hitland* seven feet long, and even more. That which we examined was three feet two inches and an half from the tip of the nose to the end of the tail: the length of the head was eight inches, from the gills to the vent, ten; from thence to the tip of the tail, twenty and one half.

The

The circumference of the head was seventeen inches, at the shoulders twenty, but near the tail only four and a half.

Its weight was twenty pounds and a quarter.

The head is a little flattened on the top: the nose blunt; the nostrils very small; the eyes small, and placed near the end of the nose.

The teeth are very remarkable, and finely adapted Teeth. to its way of life. The fore teeth are strong, conical, diverging a little from each other, stand far out of the jaws, and are commonly six above, and the same below, tho' sometimes there are only five in each jaw: these are supported within-side by a row of lesser teeth, which makes the number in the upper jaw seventeen or eighteen, in the lower eleven or twelve.

The sides of the under jaw are convex inwards, which greatly adds to their strength, and at the same time allows room for the large muscles with which the head of this fish is furnished.

The *dentes molares*, or grinding teeth of the under jaw, are higher on the outer than the inner edges, which inclines their surfaces inward: they join to the canine teeth in that jaw, but in the upper are separate from them.

In the centre are two rows of flat strong teeth, fixed on an oblong basis upon the bones of the palate and nose.

These and the other grinding teeth are often found fossil, and in that state called *Bufonites*, or *Toad-stones*: they were formerly much esteemed for their

imaginary virtues, and were set in gold, and worn as rings.

The two bones that form the under jaw are united before by a loose cartilage, which mechanism admitting of a motion from side to side, most evidently contributes to the design of the whole, *viz.* a facility of breaking, grinding, and comminuting its testaceous and crustaceous food.

The body is long, and a little compressed sideways; the skin smooth and slippery: it wants the lateral line.

The pectoral fins consist of eighteen rays, are five inches long, and seven and a quarter broad.

The dorsal fin extends from the hind part of the head almost to the tail; the rays in the fresh fish are not visible.

The anal fin extends as far as the dorsal fin.

The tail is round at its end, and consists of thirteen rays.

Color.

The sides, back, and fins, are of a livid lead color; the two first marked downwards with irregular obscure dusky lines; these in different fish have different appearances.

We think ourselves much indebted to Mr. *Travis*, Surgeon, at *Scarborough*, for his ingenious remarks on this fish, as well as on several others that frequent that coast, being a gentleman much skilled in ichthyology, and extremely liberal in communicating his knowlege.

Genus

Genus XIV. Head slender.

Body long and square.

Upper lip doubled in.

Dorsal and anal fin reaching

almost to the tail.

Seven branchiostegous rays.

LAUNCE.

I. The L A U N C E.

Ammodytes piscis, ut nos vocavimus pro *anglico* Sandilz.

Gesner Paralip. 3.

Tobian, vel Tobias, Sandtspring. *Schonevelde*, 76.

Ammodytes. Gesneri Wil. Ictb. 113.

Sand Eels, or Launces. *Raii*

syn. pisc 38, 165.

Ammodytes. Arted. synon. 29.

Ammodytes Tobianus. Lin.

syst. 430.

Tobis. Faun. suec. 302. *Gronov. Zooph.* No. 404.

THE launce is found on most of our sandy shores during some of the summer months: it conceals itself on the recesses of the tides beneath the sand, in such places where the water is left at the depth of about a foot, and are in some places dug out, in others drawn up by means of a hook contrived for that purpose. They are commonly used for baits for other fish, but they are also very delicate eating.

These fish are found in the stomachs of the *Porpesse*, an argument that the last roots up the sand with its nose as hogs do the ground.

Size.

They grow sometimes the length of nine or ten inches: the females are longer and slender than the males.

The form of the body is square, the sides are rounded, and the angles not sharp: it is nevertheless long and slender.

The head is small and taper; the under jaw much longer than the upper: the upper jaw is moveable, capable of being protruded, so that when open the gape is very wide.

The irides are silvery.

The dorsal fin runs almost the whole length of the back, is very narrow, and consists of fifty-eight rays: the pectoral fins small, and have twelve: the anus is placed much nearer the tail than the head, is narrow, and extends almost to the former.

The tail is forked, but the lobes rounded at their extremities.

The color of the back is blue, varying with green: on each side the back is a narrow dusky line or two. The sides and belly are silvery; the lateral line strait.

Genus

Genus XV. Small head.

Body extremely thin, compressed
sideways.

No pectoral fins.

MORRIS.

I. The M O R R I S.

Leptocephalus. Gronov. Zooph. No. 409. tab. 13. fig. 3.

THIS species was discovered in the sea near *Holyhead* by the late Mr. *William Morris*, and in memory of our worthy friend we have given it his name: on receiving it from Mr. *Morris*, we communicated it to that accurate Ichthyologist Doctor *Laurence Theodore Gronovius*, of *Leyden*, who has described it in his *Zoophylacium*, under the title of *Leptocephalus*, or small head.

The length was four inches; the head very small; the body compressed sideways, extremely thin, and almost transparent, about the tenth of an inch thick, and in the deepest part about one-third of an inch; towards the tail it grew more slender, and ended in a point; towards the head it sloped down, the head lying far beneath the level of the back. Descr.

The eyes large; the teeth in both jaws very small.

The lateral line strait: the sides marked with oblique strokes, that met at the lateral line.

The aperture to the gills large.

It wanted the pectoral, ventral, and caudal fins : the dorsal fin was extremely low, and thin, extending the whole length of the back very near the tail. The anal fin was of the same delicacy, and extended to the same distance from the anus.

Genus XVI. The upper jaw extending to a great length, hard, slender, and pointed.
No teeth.
Eight branchiostegous rays.
Slender body. SWORD FISH.

I. The S W O R D F I S H.

<i>Ξιφίας. Arist. Hist. an. lib. ii. c. 13. viii. c. 19. Oppian. Halieut. lib. ii. 462. iii. 442.</i>	<i>Xiphias, i. e. Gladius piscis. Gesner pisc. 1049. Caii opusc. 104.</i>
<i>Xiphias. Ovid. Halieut. 97.</i>	<i>Schwert-fische. Schonevelde, 35.</i>
<i>Xiphias, i. e. Gladius Plinii lib. xxxii. c. 2.*</i>	<i>Sword-fish. Wil. Ictb. 161. Raii syn. pisc. 52.</i>
<i>L'Heron de mer, ou grand Espadaz. Belon. 102,</i>	<i>Xiphias. Arted. synon. 47.</i>
<i>Xiphias. Rondel. 251.</i>	<i>Xiphias Gladius. Lin. syst. 432. Swerd-fisk. Faun. suec. No. 303.</i>

THIS fish sometimes frequents our coasts, but is much more common in the *Mediterranean* sea, especially in the part that separates *Italy* from *Sicily*, which has been long celebrated for it : the promontory *Pelorus**, now *Capo di Faro*, was a place noted for the resort of the *Xiphias*, being possibly the station of the *speculatores*, or the persons who watched and gave notice of the approach of the fish.

* *Athenæus*, 314.

The antient method of taking them is particularly described by *Strabo**, and agrees exactly with that practised by the moderns. Capture.

A man ascends one of the cliffs that overhangs the sea: as soon as he spies the fish, he gives notice either by his voice or by signs of the course it takes. Another, that is stationed in a boat, climbs up the mast, and on seeing the sword fish, directs the rowers towards it. As soon as he thinks they are got within reach, he descends, and taking a spear in his hand, strikes it into the fish, which, after wearying itself with its agitation, is seized and drawn into the boat. It is much esteemed by the *Sicilians*, who buy it up eagerly, and at its first coming into season give about six-pence *English* per pound. The season lasts from *May* till *August***. The antients used to cut this fish into pieces, and salt it, whence it was called *Tomus Thurianus*†, from *Thurii*, a town in the bay of *Tarentum*, where it was taken and cured.

Kircher, in his *Musurgia*, has preserved a strange incantation used by the *Sicilian* fishermen, at the capture of the *Pesce Spada*, as they call it, which is expressed in the following unintelligible jargon:

Mamassu di pajanu,
Paletta di pajanu,
Majussu di stignela,
Palettu di paenu pale,
Pale la stagnetta,
Mancuta stigneta.
Pro nastu, vardu, pressu da
Visu & da terra.

* *Lib. I. p. 16.*

** *Ray's Travels, I. 271.*

† *Tomus Thurianus, quem alii Xiphiam vocant. Plinii lib. xxxii. c. 11.*

But this use of charmed words is not confined to *Sicily*; the *Irish* have their song at the taking of the razor shell; and the *Cornish* theirs, at the taking of the whistle fish.

The sword fish is said to be very voracious, and that it is a great enemy to the Tunny, who (according to *Belon*) are as much terrified with it as sheep are at the sight of a wolf.

Ac durus Xiphias, iclu non mitior ensis;

Et pavidæ magno fugientes agmine Thunni.

Ovid. Halieut. 97.

Sharp as a sword the *Xiphias* does appear;

And crowds of flying *Tunnies* struck with fear.

Size.

It grows to a very large size; the head of one, with the pectoral fins, found on the shore near *Laugharn*, in *Caermarthenshire*, alone weighing seventy-five pounds: the snout was three feet long, rough, and hard, but not hard enough to penetrate ships and sink them, as *Pliny* pretends*.

Snout.

The snout is the upper jaw, produced to a great length, and has some resemblance to a sword, from whence the name. It is compressed at the top and bottom, and sharp at the point. The under jaw is four times as short as the upper, but likewise sharp pointed. The mouth is destitute of teeth.

The body is slender, thickest near the head, and growing less and less as it approaches the tail.

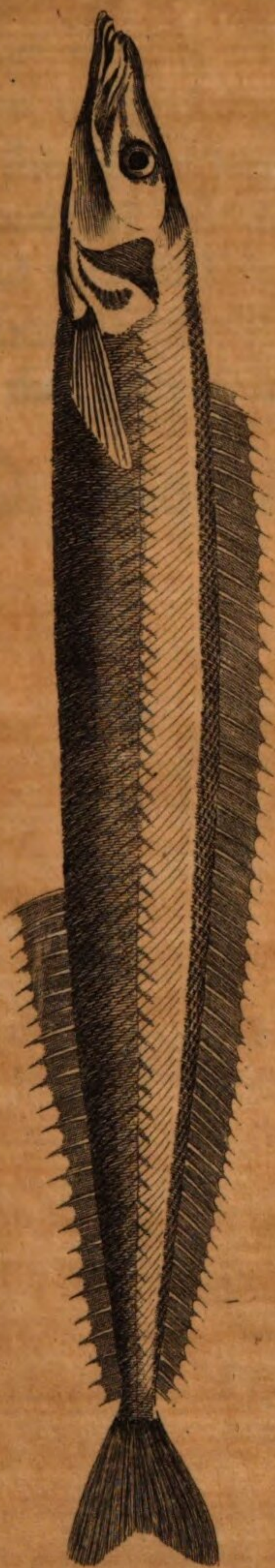
The skin is rough, but very thin: the color of the back is dusky, of the belly silvery.

* *Xiphiam, id est, Gladium, rostro mucronato esse, ab hoc naves versaffas mergi in oceano.* Plin. lib. xxxii. c. 11.

MORRIS.



LAUNCE.



S. Morrell 1840

The dorsal fin begins a little above the gills, and extends almost to the tail : it is highest at the beginning and the end, but very low in the middle : a little above the tail, on each side, the skin rises and forms two triangular protuberances, not unlike the spurious fins of the tunny.

The pectoral fins are long, and of a scythe-like form, and their first rays the longest.

The anus is placed at the distance of one-third part of the body from the tail ; beneath are two anal fins.

The tail is exactly of the shape of a crescent.

I. The D R A G O N F I S H.

Name.

LINNÆUS has given this genus the name of *Callionymus*, a fish mentioned by several of the ancients ; but the notices they have left of it are so very slight, as to render it difficult to determine what species they intended. * Play makes it a synonym to the *Uranoscopus*, a fish frequent in the Indian seas, but very different from our Dragon, a name we

Sect. II.

Sect. II.

J U G U L A R.

Genus XVII.

Upper lip doubled.

Eyes near each other.

Two breathing apertures on the hind part of the head.

First rays of the dorsal fin very long.

DRAGONET.

I. The D R A G O N E T.

La tierce espece de Exocetus ?

Belon. 218.Dracunculus. *Rondel.* 304.Dracunculus, aranei species altera. *Gesner pisc.* 80.Dragon fish. *Marten's Spitzberg.* 123.Yellow Gurnard. *Phil. Transf.* No. 293.Lyra Harvicensis. *Pet. Gaz.* tab. 22. *Dale Harwich.* 431.Callionymus Lyra. C. dorsalis prioris radiis longitudine corporis. *Lin. syst.* 433.*Faun. suec.* No. 110.Uranoscopus, *Gronov. Zooph.* No. 206.Floy-fiske. *Pontop. Norway,* ii. iii.Dracunculus marinus. *Borlase Cornwall.* 270. *Seb. Mus.* iii. 92. tab. 30. fig. 7.

Name.

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* *Lib. xxxii. c. 11.*

have

have taken the liberty of forming, from the diminutive *Dracunculus*, a title given it by *Rondeletius*, and other authors. The *English* writers have called it the Yellow Gurnard, which having no one character of the *Gurnard* genus, we think ourselves obliged to drop that name.

It is found as far north as *Spitzbergen*, and as far south as the *Mediterranean* sea, and is not unfrequent on the *Scarborough* coasts. We have also received it from *Norway*, among several other curiosities which that honest well-meaning prelate, *Erich Pontoppidan**, made us a present of.

This species grows to the length of ten or twelve inches: the body is slender, round, and smooth.

The head is large, and flat at the top; in the hind part are two orifices, thro' which it breathes, and also forces out the water it takes in at the mouth, in the same manner as the cetaceous fish.

The apertures to the gills are closed: on the end of the bones that cover them is a very singular trifurcated spine.

The eyes are large, and placed very near each other on the upper part of the head, so that they look upwards; for which reason it has been ranked among the *Uranoscopi*: the pupils are of a rich sapharine blue, the irides of a fine yellow.

The upper jaw projects much farther than the lower: the mouth is very wide: the teeth are small.

* Bishop of *Bergen*. He was also vice-chancellor of the university of *Copenhagen*, in which station he died, *December 20, 1764*, aged 66, much respected by his countrymen.

The pectoral fins are round, and of a light-brown color; the ventral placed before them, are very broad, and consist of five branched rays.

The first dorsal fin is very singular, the first ray being setaceous, and so long as to extend almost to the tail: those of the second dorsal fins are of a moderate length, except the last, which is produced far beyond the others.

The anus is placed about the middle of the belly; the anal fin is broad, and the last ray the longest. *Pontoppidan* calls this species the flying fish: whether it makes use of any of its fins to raise itself out of the water, as he was informed they did, we cannot pretend to say.

The tail is rounded and long, and consists of ten rays.

Colors.

The side line is strait: the colors are yellow, blue, and white, and make a beautiful appearance when the fish has been just taken.

II. The LESSER DRAGONET.

Dracunculus. *Wil. Ichth.* 136. Callionymus Dracunculus. C.
Raii syn. pisc. 79. dorsalis prioris radiis corpo-
 Cottus pinna secunda dorso al- re brevioribus. *Lin. syst.* 434.
 ba. *Arted. synon.* 77.

THIS species we received from Mr. *Travis*.
 Its length was only six inches and an half.

The head was compressed; the forehead sloped down to the nose, being not so level as that of the preceding.

The eyes large, and almost contiguous.

The mouth small; the teeth very minute.

Over the gills was a strong trifurcated broad spine.

The first dorsal fin had four rays; the first setaceous, extending a little higher than the others, the last very short: the two first rays and webs were yellow, the others black.

The second had ten soft rays, their ends extending beyond the webs, which were pellucid.

The pectoral fins consisted of twenty rays, and were ferruginous, spotted with a deeper cast of the same: the ventral fins consisted of five broad and much branched rays, like those of the first species.

The anal fin was white, and had ten rays; the tail had ten rays. In both species they are bifurcated at their ends, and the ray next the anal fin in both is very short.

In colors this is far inferior to the former, being of a dirty yellow, mixed with white and dusky spots; the belly is entirely white.

Genus

Genus XVIII. Lower jaw sloping down.
 Gill covers aculeated.
 Six branchiostegous rays.
 Two dorsal fins.
 Anus near the breast. WEEVER.

I. The W E E V E R.

<i>Δρακων?</i> <i>Arist. Hist. an. lib.</i>	Peter-manniken, Schwert-
<i>viii. c. 13. Ælian. Hist. an.</i>	<i>fische. Schonevelde. 16.</i>
<i>lib. ii. c. 50. Oppian. Halieut.</i>	The Weever. <i>Wil. Ictb. 238.</i>
<i>ii. 459.</i>	<i>Raii syn. pisc. 91.</i>
<i>Draco marinus Plinii lib. ix. c.</i>	<i>Trachinus maxilla inferiore</i>
<i>27. Draco, Dracunculus. lib.</i>	<i>longiore, cirris destituta.</i>
<i>xxxii. c. 11. Araneus. lib.</i>	<i>Arted. syn. 71.</i>
<i>ix. c. 48.</i>	<i>Trachinus Draco. Lin. syst. 453.</i>
<i>La vive. Belon. 209.</i>	<i>Gronov. Zooph. No. 274.</i>
<i>Draco. Rondel. 300. Gesner pisc.</i>	<i>Farling, Fiaffing. Faun. suec.</i>
<i>77. 78.</i>	<i>No. 305.</i>

THE qualities of this fish were well known to the antients, who take notice of them without any exaggeration: the wounds inflicted by its spines are exceedingly painful, attended with a violent burning, and most pungent shooting, and sometimes with an inflammation that will extend from the arm to the shoulder*.

It is a common notion that these symptoms proceed from something more than the small wound this fish is capable of inflicting; and that there is a venom infused into it, at least into such as is made by

* It is probable that the malignity of the symptoms arises from the habit of body the person is in, or the part in which the wound is given.

the spines that form the first dorsal fin, which is dyed with black, and has a most suspicious aspect. The remedy used by a fisherman in our neighbourhood is the sea sand, with which he rubs the place affected for a considerable time *.

This fish buries itself in the sands, leaving only its nose out, and if trod on immediately strikes with great force; and we have seen them direct their blows with as much judgment as fighting cocks. Notwithstanding this noxious property of the spines, it is exceeding good meat.

The *English* name seems to have no meaning, being Name. corrupted from the *French*, *la vive*, so called as being capable of living long out of the water, according to the interpretation of *Belon*.

It grows to the length of twelve inches, but is Descr. commonly found much less.

The irides are yellow: the under jaw is longer than the upper, and slopes very much towards the belly: the teeth are small.

The back is strait, the sides flat, the belly prominent, the lateral line strait: the covers of the gills are armed with a very strong sharp spine.

The first dorsal fin consists of five very strong sharp spines, which, as well as the intervening membranes are tinged with black; this fin, when quiescent, is lodged in a small hollow.

The second consists of several soft rays, commences just at the end of the first, and continues

* In the *Universal Museum* for November 1765, is an instance of a person who was reduced to great danger by a wound from this fish, and who was cured by the application of sweet oil, and taking opium and *venice treacle*.

almost to the tail. The pectoral fins are pretty broad and angular; the ventral fins small.

The vent is placed remarkably forward, very near the throat: the anal fin extends from it to a small distance from the tail, is a little hollowed in the middle, but not so much as to be called forked.

The sides of this fish are marked lengthways with two or three dirty yellow lines, and transversely by numbers of small ones: the belly is silvery.

II. The LESSER WEEVER.

Araneus minor, septentrionalibus Anglis, an Otter Pike.

Raii syn. pisc. 92. Wil. Ichth. 289.

THIS is a species which Mr. Ray says he heard was found in the north of *England*, but that he was acquainted with it only by name.

Genus

Genus XIX. Head smooth.

Seven slender branchiostegous rays.

Body oblong; scales deciduous.

All the fins covered with a common skin.

Ventral fins slender, and ending in a point.

Teeth in the jaws; and in the palate a series of minute teeth closely set together.

COD FISH.

*

With three dorsal fins; the chin bearded.

I. The COMMON COD FISH.

La-Morue. *Belon.* 121.

Molva. *Rondel.* 280.

Molva five morhua altera. *Gesner pisc.* 88.

Kablauw. *Schonevelde.* 18.

Asellus major vulgaris. *Wil. Ictb.* 165.

Cod-fish, or Keeling. *Raii syn. pisc.* 53.

Gadus dorso tripterygio, ore cirrato, cauda æquali fere cum radio primo spinoso. Arted. synon. 35.

Gadus morhua. Lin. syst. 436.

Gronov. Zooph. No. 319.

Cabblia. Faun. suec. No. 398.

THIS fish is found only in the northern part of the world; it is, as *Rondeletius* calls it, an ocean fish, and never met with in the *Mediterranean sea* *. It affects cold climates, and seems confined

* None (says Captain *Armstrong* in his *History of Minorca*) of the *Aselli* or cod fish kind, frequent our shores, *p.* 163.

between the latitudes 66 and 50: what are caught north and south of those degrees being either few in quantity, or bad in quality. The *Greenland* fish are small and emaciated thro' want of food, being very voracious, and having in those seas a dearth of provision.

This locality of situation is common to many other species of this genus, most of them being inhabitants of the cold seas, or such that lie within zones that can just clame the title of temperate. There are nevertheless certain species found near the *Canary Islands*, called *Cherny**, of which we know no more than the name; but according to the unfortunate Captain *Glas*, are better tasted than the *Newfoundland* kind.

The great rendezvouz of the cod fish is on the Banks of *Newfoundland*, and the other sand banks that lie off the coasts of *Cape Breton*, *Nova Scotia*, and *New England*. They prefer those situations, by reason of the quantity of worms produced in those sandy bottoms, which tempt them to resort there for food: but another cause of the particular attachment the fish have to these spots, is their vicinity to the polar seas, where they return to spawn; there they depose their roes in full security, but want of food forces them, as soon as the first more southern seas are open, to repair thither for subsistence.

Few are taken north of *Iceland*, but on the south and west coasts they abound: they are again found to swarm on the coasts of *Norway*, in the *Baltic*, off the *Orkney* and the *Western Isles*; after which their

* *Hist. Canary Islands*, 198.

numbers decrease, in proportion as they advance towards the south, when they seem quite to cease before they reach the mouth of the Straits of *Gibraltar*.

Before the discovery of *Newfoundland*, the greater fisheries of cod were in the seas of *Iceland*, and of our *Western Isles*, which were the grand resort of ships of all the commercial nations; but it seems that the greatest plenty was met with near *Iceland*; for we find *Queen Elizabeth* condescending to ask permission to fish in those seas from *Christian* the IVth. of *Denmark*, yet afterwards she so far repented her request, as to instruct her ambassadors to that court, to insist on the right of a free and universal fishery*.

But the *Spanish*, the *French*, and the *Britons*, had much the advantage of us in all fisheries at the beginning, as appears by the state of that in the seas of *Newfoundland* in the year 1578**, when the number of ships belonging to each nation stood thus:

Spaniards, 100, besides 20 or 30 that came from *Biscaie*, to take whale for train, being about five or six thousand tons.

Portuguese, 50, or three thousand tons.

French and *Britons*, 150, or seven thousand tons.

English, from 30 to 50.

But Mr. *Anderson*, in his Dictionary of Commerce, I. 363, says, that the *French* began to fish there so

* *Rymer's Fœd.* xvi. 275, 425.

** *Hackluyt's Coll. Voy.* iii. 132.

early as 1536; and we think we have somewhere read, that their first pretence for fishing for cod in those seas, was only to supply an *English* convent with that article.

The encrease of shipping that resort to those fertile banks, are now unspeakable: our own country still enjoys the greatest share, which ought to be esteemed our chiefest treasure, as it brings wealth to individuals, and strength to the state.

All this immense fishery is carried on by the hook and line only*; the bait is herring, a small fish called a *Capelin*, a shell fish called *Clams*, and bits of sea fowl; and with these are caught fish sufficient to find employ for near fifteen thousand *British* seamen, and to afford subsistence to a much more numerous body of people at home, who are engaged in the various manufactures which so vast a fishery demands.

Food.

The food of the cod is either small fish, worms, testaceous, or crustaceous animals, such as crabs, large whelks, &c. and their digestion is so powerful, as to dissolve the greatest part of the shells they swallow. They are very voracious, and catch at any small body they perceive moved by the water, even stones and pebbles, which are often found in their stomachs.

Vastly
prolific.

Providence hath kindly ordained that this fish, so useful to mankind, should be so very prolific as to

* We have been informed that they fish in the depth of from fifteen to sixty fathoms, according to the inequality of the *Bank*, which is represented as a vast mountain under water above five hundred miles long, and near three hundred broad, and that seamen knew when they approach it by the great swell of the sea, and the thick mists that impend over it.

supply

supply more than the deficiencies of the multitudes annually taken. *Leuwenhoek* counted nine millions three hundred and eighty-four thousand eggs in a cod fish of a middling size, a number sure that will baffle all the efforts of man, or the voracity of the inhabitants of the ocean to exterminate, and which will secure to all ages an inexhaustible supply of grateful provision.

In our seas they begin to spawn in *January*, and deposite their eggs in rough ground, among rocks. Some continue in roe till the beginning of *April*. The cod fish in general recover quicker after spawning than any other fish, therefore it is common to take some good ones all the summer. When they are out of season they are thin tailed and lousy, and the lice chiefly fix themselves on the inside of their mouths.

The fish of a middling size are most esteemed for the table, and are chosen by their plumpness and roundness, especially near the tail, by the depth of the fulcus or pit behind the head, and by the regular undulated appearance of the sides, as if they were ribbed. The glutinous parts about the head lose their delicate flavor after it has been twenty-four hours out of the water, even in winter, in which these and other fish of this genus are in highest season.

The largest that we ever heard of taken on our coasts weighed sixty-nine pounds, but the general weight on the *Yorkshire* seas is from fourteen to forty.

This species is short in proportion to its bulk, the belly being very large and prominent.

The jaws are of an equal length, at the end of the lower is a small beard; the teeth are disposed in the palate as well as jaws.

The eyes are large.

On the back are three soft fins; the first has fourteen, the two last nineteen rays a-piece. The ventral fins are very slender, and consist but of six rays; the two first extending far beyond the others. It has two anal fins; the first consisting of twenty, the last of sixteen rays.

The tail is almost even at the end: the first ray on each side is short, and composed of a strong bone.

The color of this fish is cinereous on the back and sides, and commonly spotted with yellow: the belly is white, but they vary much, not only in color* but in shape, particularly that of the head.

Side line The side line is white and broad, strait, till it reaches opposite the vent, when it bends towards the tail.

* Codlings are often taken of a yellow, orange, and even red color, while they remain among the rocks, but on changing their place assume the color of other cod fish.

The largest that we ever heard of taken on our coast weighed sixty-nine pounds, but the general weight on the Jersey coast is from fourteen to forty.

This species is short in proportion to its bulk, the head is very large and prominent.

II. The

The

II. The T O R S K.

Asellus varius vel striatus,
Dorsch, Pamuchelen. *Scho-*
nevelde, 19. *Wil. Ich.* 172.
Raii syn. pisc. 54.

Gadus dorso tripterygio, ore
cirrato, colore vario, max-
illa superiore longiore, cauda
æquali. *Arted. synon.* 135.

Gadus callarias. *G. triptery-*
gius, cirratus varius, cauda
integra, maxilla superiore
longiore. *Lin. syst.* 436.

Torsk. *Faun. suec.* No.
307.

THESE fish are found in great quantities in the *Baltic*, and the northern seas, particularly in *Brassa Sound**, and about the *Orkney Isles*, and are supposed never to wander into the more southern seas.

It is a fish much esteemed for its delicacy; the meat divides into flakes on being boiled, like that of a salmon: for which reason, as *Schonevelde* tells us, the *Germans* call it *Scheibendorfsch*.

It never grows to a large size, the greatest not exceeding thirty inches**.

The head is small: the upper jaw is a little longer than the lower: in the first the teeth are disposed in a single row; in the upper in several. In the roof of the mouth is a rough triangular bone: at the end of the lower jaw is a small beard.

Between the head and the first dorsal fin is a deep groove.

* Where it is called *Tusk*. *Martin's West. Isles.* 385.

** We find this account of its length in the *M. S. Journal* of the late Bishop of *Meath*, Doctor *Richard Pocock*; but we believe it is very seldom they are found so large.

The belly is a little prominent; the side line white, broad, placed nearer the back than the belly, and a little incurvated.

The dorsal fins are dusky, the two first spotted: the back, head, and sides of a deep olive color, in some whitish, and marked with numerous yellow spots: the belly white.

The tail even at the end, and its rays soft.

III. The H A D O C K.

Aigrefin, ou aiglefin. *Belon.* 118.

Tertia asellorum species. *Ron-*
del. 277.

Tertia asel. Sp. Eglefinus. *Ges-*
ner pisc. 86.

Onos. five asinus veterum. *Turn-*
er epist. ad Gesner.

Asellus minor, Schelfisch. *Scho-*
nevelde. 18.

Hadock. *Wil. Ich.* 170. *Raii*
syn. pisc. 55.

Gadus dorso tripterygio, ore
cirrato, max. sup. longiore,
corpore albicante, cauda pa-
rum bifurca. Arted. synon.
36.

Gadus Aeglefinus. G. tripte-
rygius cirratus albicans, cau-
da biloba. Lin. syst. 435.

Kolja. Faun. suec. No. 306.

Gronov. Zooph. No. 321.

Name.

OUR countryman *Turner* conjectured this species to have been the *OvG*, or *Asinus*, of the antients, and *Belon*, that it was the *Kριός*, and the *Πρόβατος* of *Oppian*. We have carefully consulted most of the antient naturalists, but cannot discover any marks by which we can determine the species they intended. The words **OvG*, ***Asinus*, *Asellus*, †*Callarias*, and *Bacchus*, are familiarly applied

* *Arist. Hist. an. lib. viii. c. 15. Oppian Halieut. l. 151. iii. 191.*

** *Ovidii Halieut. lin. 131. Plinii lib. ix. c. 16. 17. † Lib.*
c. 17.

to several of our species of cod fish by the more modern writers ; yet the antients from whom they are borrowed, have not authorized the application to any particular kind, either by description or any other method.

Different reasons have been assigned for giving the name of *Ovatus*, or *Asinus* to this genus, some imagining it to be from the color of the fish, others because it used to be carried on the backs of asses to market ; but we shall drop this uncertain subject, and proceed to what we have fuller assurance of.

Large hadocks begin to be in roe the middle of *Season.* *November*, and continue so till the end of *January* ; from that time till *May* they are very thin tailed, and much out of season. In *May* they begin to recover, and some of the middling-sized fish are then very good, and continue improving till the time of their greatest perfection. The small ones are extremely good from *May* till *February*, and some even in *February*, *March*, and *April*, viz. those which are not old enough to breed.

The fishermen assert, that in rough weather hadocks sink down into the sand, and ooze in the bottom of the sea, and shelter themselves there till the storm is over, because in stormy weather they take none, and those that are taken immediately after a storm are covered with mud on their backs.

In summer they live on young herrings and other *Food.* small fish ; in winter on the stone-coated worms*, which the fishermen call *hadock meat*.

* A species of *Serpula*.

The

Vast
Shoals.

The grand shoal of hadocks comes periodically on the *Yorkshire* coasts. It is remarkable that they appeared in 1766 on the 10th of *December*, and exactly on the same day in 1767: these shoals extended from the shore near three miles in breadth, and in length from *Flamborough* head to *Tinmouth* castle, and perhaps much farther northwards. An idea may be given of their numbers by the following fact: three fishermen, within the distance of a mile from *Scarborough* harbour, frequently loaded their *coble* or boat with them twice a-day, taking each time about a ton of fish: when they put down their lines beyond the distance of three miles from the shore, they caught nothing but dog fish, which shows how exactly these fish keep their limits.

The best hadocks were sold from eightpence to a shilling per score, and the poor had the smaller sort at a penny, and sometimes a halfpenny per score*.

The large hadocks quit the coast as soon as they go out of season, and leave behind great plenty of small ones. It is said that the large ones visit the coasts of *Hamburgh* and *Jutland* in the summer.

It is no less remarkable than providential, that all kinds of fish (except mackrel) which frequent the *Yorkshire* coast, approach the shore, and as if it were offer themselves to us, generally remaining there as long as they are in high season, and retire from us when they become unfit for use,

* Here Mr. *Travis*, to whom I am much obliged for a most accurate account of the *Yorkshire* fish, with great humanity projects an inland navigation, to convey at a cheap and easy method, those gifts of Providence to the thousands of poor manufacturers who inhabit the distant parts of that vast county.

It is the commonest species in the *London* markets.

They do not grow to a great bulk, one of four- Deser.
teen pounds being of an uncommon size, but those
are extremely coarse; the best for the table weigh-
ing from two to three pounds.

The body is long, and rather more slender than
those of the preceding kinds: the head slopes down
to the nose: the space between the hind part of
the first dorsal fin is ridged: on the chin is a short
beard.

On the back are three fins resembling those of the
common cod fish: on each side beyond the gills is
a large black spot. Superstition assigns this mark
to the impression St. *Peter* left with his finger and
thumb when he took the tribute out of the mouth
of a fish of this species, which has been continued
to the whole race of hadocks ever since that mi-
racle.

The lateral line is black: the tail is forked.

The color of the upper part of this species is
dusky or brown; the belly and lower part of the
sides silvery.

IV. The WHITING POUT.

Asellus mollis latus. Mr. *Lister* apud *Wil. Ichth. App.* 22.

Whiting Pout, *Londinensibus.* *Raii syn. pisc.* 55.

Gadus dorso tripterygio, ore cirrato, longitudine ad latitudinem tripla, pinna ani

prima ossiculorum triginta. *Arted. synon.* 37.

Gadus barbatus. G. tripterygius cirratus maxilla inferiore punctis utrinque septem. *Lin syst.* 437. *Gronov. Zooph.* No. 320.

Sma-Torsk. Faun. suec. No. 311.

THIS species nevers grows to a large size, seldom exceeding a foot in length.

It is distinguished from all others by its great depth; one of the size abovementioned being near four inches deep in the broadest part.

The back is very much arched; the mouth small; the beard short.

The first dorsal fin is triangular, and terminates in a long fibre: the color of the fins and tail black: at the bottom of the pectoral fins is a black spot.

The lateral line is white, broad, and crooked.

The tail is even at the end.

The color of the body is white, but more obscure on the back than the belly.

This fish was first discovered by Doctor *Lister*, and communicated by him, with several other species, to Mr. *Ray*.

V. The B I B.

Afellus nanus, Dwergdorsch, *Gadus dorso tripterygio*, one
 Krumstert ? *Schoneveldde*, cirrato, ossiculo pinnarum
 20. ventralium primo in longam
Bib & Blinds Cornubiensibus. setam producta. *Arted. synon.*
Wil. Ichth. 169. 35.
Afellus luscus. Raii syn pisc. 54. *Gadus luscus. Lin. syst.* 437.

THIS species is supposed by *Artedius* to be the
 same with the former; but since it does not
 appear that he had an opportunity of examining it,
 we shall depend on the judgment of Mr. *Ray*, who
 had seen both, and shall form a separate article of it
 from his description, as it has not yet fell in our
 way.

It grows to the length of one foot: the body is
 deep, and the sides compressed: the scales larger
 than those of the cod fish, and adhere to the skin:
 the eyes are covered with a loose membrane, which
 it is said the fish can at pleasure blow up like a blad-
 der. The mouth small; the teeth disposed like
 others of the kind: on the chin is a beard, which
 in grown fish is an inch long.

On the back are three fins; the first has twelve
 rays; the middle fin, which is the longest, has twen-
 ty-three; the last twenty.

The pectoral fins have about sixteen rays; the
 ventral fins seven or eight, the first of which is very
 long and slender.

The

The vent is placed at the distance of only one-third the length of the whole fish from the tip of the nose ; behind the vent are two fins.

The tail is almost even at the end.

Color.

The color of the back is light olive, or dirty yellow ; the belly silvery.

It is esteemed a good eating fish, not unlike the whiting in taste.

VI. The P O O R.

Le Merlan ? *Belon*. 120.

Anthiæ secunda species. Ron-
del. 191. *Gesner pisc*. 56.

Afellus mollis minor, seu afellus
omnium minimus. MOLLO
Venetiis. CAPELAN Massiliæ.
Wil. Ictb. 171.

Poor or Power *Cornub. Mr. Ja-*
go. Raii syn. pisc. 163. *fig*. 6.

Gadus dorso tripterygio, ore
cirrato, corpore fescunciali,
ano in medio corporis. Ar-
ted. synon. 36.

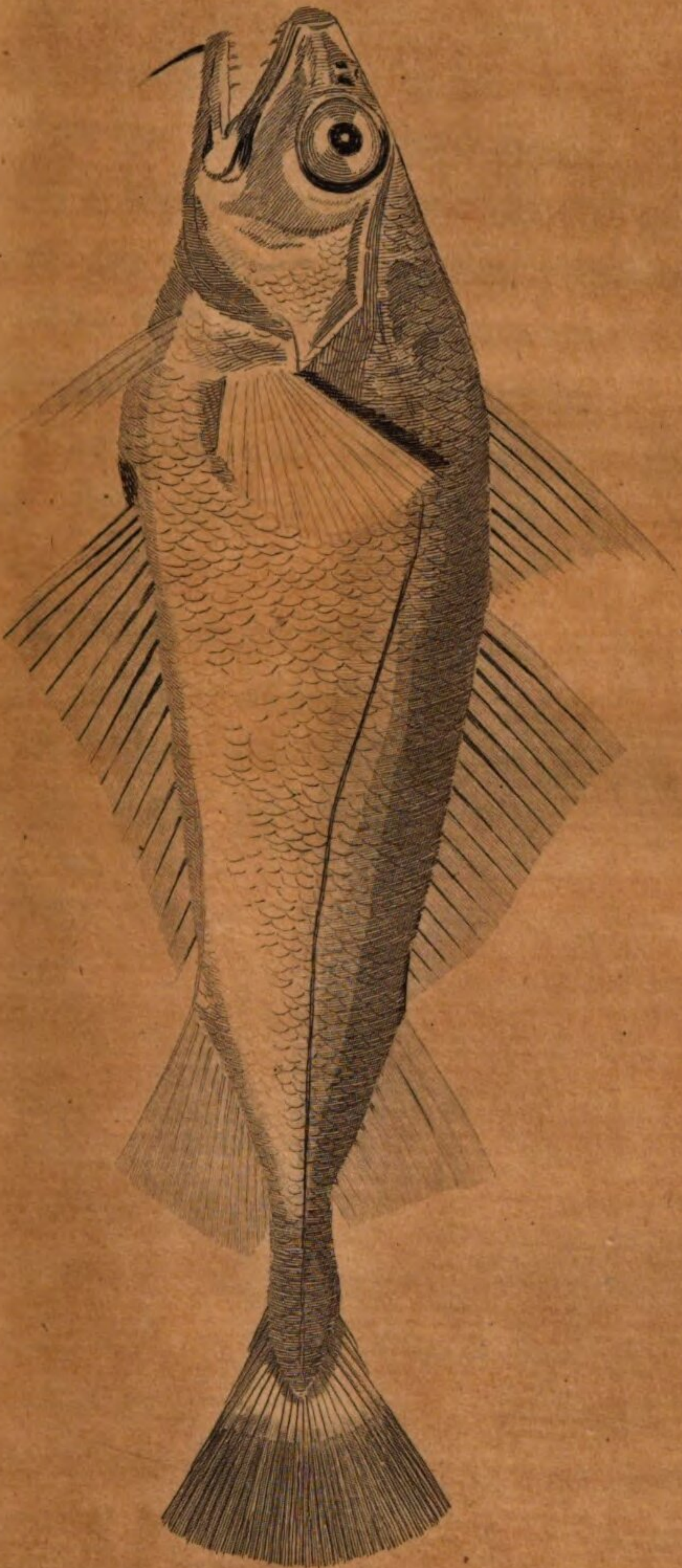
Gadus minutus. Lin. syst. 438.

THIS is the only species of cod fish with three dorsal fins that we (at this time*) are assured is found in the *Mediterranean* sea. It is taken near *Marseilles*, and sometimes in such quantities as to become a perfect nuisance ; for no other kinds of fish are taken during that time**. It is esteemed a good fish, but is incapable of being salted or dried :

* *Mr. Ray*, who visited the *Italian* and *Sicilian* seas, and was a most diligent observer, says he could discover no other kind ; but it is with pleasure we acquaint the reader, that our learned correspondent *Doctor Gouan*, of *Montpellier*, will soon favor us with ample information on that head, it being the design of that able Naturalist soon to publish his *Ichthyology*, which will doubtlessly point out the fish of his own seas.

** *Rondel*. 191.

Belon



BIB.

J Magell Sculp

J Wilkinson del

Below

Belon says, that when it is dried in the sun, it grows as hard as horn; *C'est dela que les ANGLOIS l'ont nommé Bouclzs horn.*

It is the smallest species yet discovered, being Descr. little more than six inches long.

On the chin is a small beard: the eyes are covered with a loose membrane: on the gill-covers, and the jaws are on each side, nine punctures.

The first dorsal fin has twelve rays; the second nineteen; the third seventeen.

The pectoral fins thirteen; the ventral fins six: the first anal fin twenty-seven; the second seventeen.

The color on the back is a light brown; on the belly a dirty white.

We owe the discovery of this kind in our seas to the Rev. Mr. *Jago*.

**

Three dorsal fins: chin beardless.

VII. The COAL FISH.

Colfisch. *Belon.* 128.

Colfisch *Anglorum.* *Gesner pisc.*

89.

Asellus niger. Kolfisch, Koler.

Schonevelde, 19.

Cole fish *Septentrionalium an-*

glorum. Rawlin Pollack *Cor-*

nubiensium. *Wil. pisc.* 168.

Raii syn. pisc. 54.

Gadus dorso tripterygio, ore

imberbi, maxilla inferiore

longiore et linea laterali

recta. Arted. synon. 34.

Gadus carbonarius. Lin. syst.

438. *Gronov. Zooph. No.*

317.

THE coal fish takes its name from the black color that it sometimes assumes. *Belon* calls it the *Colfisch*, imagining it was so named by the *English*, from its producing the *Ichthyocolla*, but *Gesner* gives the true etymology.

These fish are common on most of our rocky and deep coasts, but particularly those of the north of *Great Britain*.

Young.

The young begin to appear on the *Yorkshire* coast the beginning of *July* in vast shoals, and are at that time about an inch and an half long. In *August* they are from three to five inches in length, and are taken in great numbers with the angling rod, and are then esteemed a very delicate fish, but grow so coarse when they are a year old that few people will eat them. Fish of that age are from eight to fifteen inches long, and begin to have a little blackness

ness near the gills, and on the back, and the blackness encreases as they grow older.

The fry is known by different names in different places: they are called at *Scarborough Parrs*, and when a year old, *Billets*. About nine or ten years ago such a glut of *Parrs* visited that part, that for several weeks it was impossible to dip a pail into the sea without taking some.

Tho' this fish is so little esteemed when fresh, yet it is salted and dried for sale; a person last year having cured above a thousand at *Scarborough*.

The coal fish is of more elegant form than the Deser. cod fish: they generally grow to the length of two feet and an half, and weigh about twenty-eight or thirty pounds at most. The head is small; the under jaw a little longer than the upper: the irides silvery, marked on one side with a black spot.

It has three dorsal fins, the first consists of fourteen, the next of twenty, the last of twenty-two rays.

The pectoral fins of eighteen; the ventral of six: the first anal fin of twenty-two, the second of nineteen.

The tail is broad and forked.

These fish vary in color. We have seen some whose back, nose, dorsal fins and tail were of a deep black: the gill covers silver and black: the ventral and anal fins white; the belly of the same color.

We have seen others dusky, others brown, but in all the lateral line was strait and white, and the lower part of the ventral and anal fins white.

VIII. The POLLACK.

<i>Afellus virescens</i> , Schwartres Kolmulen. <i>Schonevelde</i> , 20.	<i>Gadus dorso tripterygio</i> , ore imberbi, max. inf. longiore,
<i>Afellus flavescens</i> ; Gelbe Kol- mulen. <i>Ibid.</i>	linea laterali curva. <i>Arted.</i> <i>synon.</i> 35.
<i>Afellus Huitingo-Pollachius</i> . <i>Wil. Ich.</i> 167.	<i>Gadus Pollachius</i> . <i>Lin. syst.</i> 439. <i>Gronov. Zooph.</i> No. 318.
Whiting Pollack. <i>Raii syn. pisc.</i> 53.	<i>Norwegis Scy. Bahusis Grafik?</i> <i>Faun. suec.</i> No. 309.

THIS species is common on many of our rocky coasts: during summer they are seen in great shoals frolicking on the surface of the water, and flinging themselves into a thousand forms. They are at that time so wanton as to bite at any thing that appears on the top of the waves, and are often taken with a goose's feather fixed to the hook. They are a very strong fish, being observed to keep their station at the feet of the rocks in the most turbulent and rapid sea.

They are a good eating fish: they do not grow to a very large size; at least the biggest we have seen not exceeding six or seven pounds: but we have heard of some that were taken in the sea near *Scarborough*, which they frequent during winter, that weighed near twenty-eight pounds.

The under jaw is longer than the upper; the head and body rises pretty high, as far as the first dorsal fin.

The side line is incurvated, rising towards the middle of the back, then sinking and running strait to the tail; it is broad, and a brown color.

The

The first dorsal fin has eleven rays, the middle nineteen, the last sixteen: the tail is a little forked.

The color of the back is dusky, of some inclining to green: the sides beneath the lateral line marked with lines of yellow; the belly white.

IX. The W H I T I N G.

Secunda asellorum species.	Gadus dorso tripterygio, ore
Rondel. 276.	imberbi corpore albo, max-
Merlanus. Rondel. Gesner pisc.	illa superiore longiore. Ar-
85.	ted. synon. 34.
Asellus candidus primus, Wit-	Gadus merlangus. Lin. syst.
ling. Schonevelde, 17.	438. Gronov. Zooph. No. 316;
Asellus mollis major, seu al-	Hwitling, Widding. Faun. suec.
bus. Wil. Ictb. 170.	No. 310.
Whiting. Raii syn. pisc. 55.	

WHITINGS appear in vast shoals on our seas in the spring, keeping at the distance of about half a mile to that of three from the shore. They are caught in vast numbers by the line, and afford excellent diversion.

They are the most delicate as well as the most wholesome of any of the genus, but do not grow to a large size; the biggest we ever saw * not exceeding twenty inches, but that is very uncommon, the usual length being ten or twelve.

It is a fish of an elegant make: the upper jaw is the longest; the eyes large, the nose sharp, the teeth of the upper jaw long, and appear over the lower when closed.

* We have been informed that whittings, from four to eight pounds in weight, have been taken in the deep water at the edge of the Dogger-Bank.

The first dorsal fin has fifteen rays, the second eighteen, the last twenty.

The color of the head and back is a pale brown; the lateral line white, and is crooked; the belly and sides silvery; the last streaked lengthways with yellow.

*
*
*

With only two dorsal fins.

X. The H A K E.

Le Merluz. *Belon.* 115.

Afellus, ὄνος, ὀνίσκος. *Rondel.*
272.

Merlucius. *Gesner pisc.* 84.

Afellus primus five Merlucius.
Wil. Ictb. 174.

The Hake. *Raii syn. pisc.*

Gadus dorso dipterygio, maxilla inferiore longiore. *Arted. synon.* 36.

Gadus Merlucius. *Lin. syst.*
439. *Faun. suec. No.* 314.
Gronov. Zooph. No. 315.

A FISH that is found in vast abundance on many of our coasts, and of those of *Ireland*. There was formerly a vast stationary fishery of *Hake* on the *Nymph Bank* off the coast of *Waterford*, immense quantities appearing there twice a year; the first shoal coming in *June*, during the *Mackrel* season, the other in *September*, at the beginning of the *Herring* season, probably in pursuit of those fish: it was no unusual thing for six men with hooks and lines to take a thousand *Hake* in one night, besides a considerable quantity of other fish. These were salted and sent to *Spain*, particularly to *Bilboa*. * We are

• *Smith's Hist. Waterford*, 261.

at

at this time uninformed of the state of this fishery, but find that Mr. *Smith*, who wrote the History of the County of *Waterford*, complain even in his time (1746) of its decline. Many of the gregarious fish are subject to change their situations, and desert their haunts for numbers of years, and then return again. We see p. 78, how unsettled the *Basking Shark* appears to be: Mr. *Smith* instances the loss of the *Haddock* on the *Waterford* shores, where they used to swarm; and to our own knowledge we can bring the capriciousness of the herrings, which so frequently quit their stations, as another example.

Sometimes the irregular migration of fish is owing to their being followed and harassed by an unusual number of fish of prey, such as the shark kind.

Sometimes to deficiency of the smaller fish, which served them as food.

And lastly, in many places to the custom of trawling, which not only demolishes a quantity of their spawn, which is deposited in the sand, but also destroys or drives into deeper waters numberless worms and insects, the repast of many fish.

The hake is in *England* esteemed a very coarse fish, and is seldom admitted to table either fresh or salted*.

These fish are from a foot and an half to near twice that length: they are of a slender make, of a pale ash color on their backs, and of a dirty white on their bellies. Descr.

* When cured it is known by the name of *Poor John*.

Their head is flat and broad; the mouth very wide; the teeth very long and sharp, particularly those of the lower jaw.

The first dorsal fin is small, consisting of nine rays; the second reaches from the base of the former almost to the tail, and is composed of forty rays, of which the last are the highest: the pectoral fins have about twelve, the ventral seven: the anal thirty-nine.

The tail is almost even at the end.

XI. The LESSER HAKE.

Galee, claria marina. *Belon.* Tinca marina. *Aldr. Wil. Ich.*
 126. 205. *Raii syn. pisc.* 75.
Phycis. Rondel. 186. *Gesner* *Phycis. Arted. synon. App.* iii.
pisc. 718. *Blennius Phycis. Lin. syst.* 442.

THIS is the fish to which *Rondeletius* gives the name of *Phycis*, borrowing it from *Aristotle* and *Pliny*, who have not so sufficiently characterized it, as to enable us to judge what species they intended. It is found in the *Mediterranean* more frequently than in our seas, and we believe is the fish mentioned by Mr. *Armstrong*, and Doctor *Cleghorn**, in their Histories of *Minorca*, under the name of *Molio*, *Mollera*, and *Molle*. It is known on the coast of *Cornwall* by the name of the greater forked beard**, where it was first discovered by Mr. *Jago*,

* *Armstrong*, 161. *Cleghorn*, 43.

** *Barbus major Cornubiensis cirris bifurcatis*: the great forked beard. Mr. *Jago. Raii syn. pisc.* 163. *fig.* 7.

We place it in this genus, as it has more the appearance of the cod-fish kind, the hake especially, than of the *Blenny*, into which genus *Linnaeus* has flung it; we therefore have given this species the name of the *Lesser Hake*.

The length of one that was taken on the *Flintshire* shores was eleven inches and an half, its greatest depth three inches; but according to Doctor *Borlase*, some grow to be above eighteen inches long.

The head sloped down to the nose in the same easy manner with others of this genus: the mouth large: besides the teeth in the jaws was a triangular congeries of small teeth in the roof of the mouth.

At the end of the lower jaw was a small beard. The first dorsal fin was triangular; the first ray extended far beyond the rest, and was very slender: the second fin began just behind the first, and extended almost to the tail: the ventral fins were three inches long, and consisted of only two rays, joined at the bottom, and separated or bifurcated towards the end: the vent was in the middle of the body: the anal fin extended from thence just to the tail: the lateral line was incurvated: the tail was rounded.

The color was a cinereous brown.

XII. The L E S T H A K E.

Barbus minor Cornubiensis cirris
bifurcis. The lesser forked

beard. Mr. *Jago. Raii syn.*
pisc. 164. *fig.* 8.

WE never saw this species, and having but very imperfect descriptions of it, cannot with any certainty pronounce it to be of this genus, but are unwilling to separate them, as we found them united by that judicious Ichthyologist Mr. *Jago*. It is said not to exceed five inches in length: the first dorsal fin (in the print) is shorter than that of the preceding; the second resembles that of the other kind: the ventral fins bifurcated. It has a small beard, and a rounded tail, but the head is shorter and more steep; the color black, the skin smooth, and the appearance disagreeable.

XIII. The L I N G.

Ling, Lingfische. Belon. 130. *Gadus dorso dipterygio, ore serrato, maxilla superiore longiore. Arted. synon.* 36.

Molva major Charleton ex. pisc. 3. *Gadus molva. Lin. syst.*
Schonevelde, 18. 439.

Ling. Wil. Ictb. 175. *Raii syn. pisc.* 56. *Langa. Faun. succ. No.* 313.

THE ling takes its name from its length, being corrupted from the word *long*. It abounds about the *Scilly Isles*, on the coasts of *Scarborough*,
and

and those of *Scotland* and *Ireland*, and forms a considerable article of commerce*.

In the *Yorkshire* seas they are in perfection from the beginning of *February* to the beginning of *May*, and some till the end of that month. In *June* they spawn, depositing their eggs in the soft oozy ground of the mouth of the *Tees*: at that time the males separate from the females, and resort to some rocky ground near *Flamborough Head*, where the fishermen take great numbers without ever finding any of the female or roed fish among them.

While a ling is in season its liver is very white, and oil. abounds with a fine flavored oil; but as soon as the fish goes out of season, the liver becomes red as that of a bullock, and affords no oil. The same happens to the cod and other fish in a certain degree, but not so remarkably as in the ling. When the fish is in perfection, a very large quantity of oil may be melted out of the liver by a slow fire, but if a violent sudden heat be used for that purpose, they yield very little. This oil, which nature hoards up in the cellular membranes of fishes, returns into their blood, and supports them in the engendring season, when they pursue the business of generation with so much eagerness as to neglect their food.

Vast quantities of ling is salted for exportation, as well as for home consumption. When it is cut or split for curing, it must measure twenty-six inches or upwards from the shoulder to the tail; if less than

* This branch of trade was considerable so long ago as the reign of *Edward III.* an act for regulating the price of *Lob, Ling, and Cod*, being made in his 31st year.

that it is not reckoned a sizeable fish, and consequently not entitled to the bounty on exportation; such are called *Drizzles*, and are in season all summer.

Descr.

The usual size of a ling is from three to four feet; but we have heard of one that was seven feet long.

The body is very slender; the head flat; the upper jaw the longest; the teeth in that jaw small and very numerous; in the lower, few, slender, and sharp: on the chin is a small beard.

The first dorsal fin is small, placed near the head, and consists of fifteen rays: the second is very long, reaching almost to the tail, and consists of sixty-five rays: the pectoral fins have fifteen radiated rays, the ventral fins six; the anal sixty-two: the tail is rounded at the end.

Color.

These fish vary in color, some being of an olive hue on the sides and back, others cinereous; the belly white.

XIV. The B U R B O T.

Strinfias, ou Botatrissa. *Belon.*
300.

Lota. *Rondel. fluviat.* 165. *Ges-*
ner pisc. 599.

Quappen, Elff-quappen, Ti-
der-quappen, Truschen ?
Schone-velde, 49.

Burbot, or Bird-bolt. *Plot.*
Staff. 241. *tab.* 22. *fig.* 4.

Mustela fluviatilis nostratibus

Eel-pout. *Wil. Ictb.* 125.
Raii syn. pisc. 67.

Aal-rutte, Rutte. *Kram.* 388.

Gadus dorso dipterygio, ore
cirrato, maxillis æqualibus.
Arted. synon. 38.

Gadus Lota. Lin. syst. 440.

Gronov. Zooph. No. 97.

Lake. Faun. suec. No. 113.

THIS fish is found in the *Trent*, but in greater Place.
plenty in the river *Witham*, and in the great
East Fen in *Lincolnshire*. It is a very delicate fish
for the table, tho' of a disgusting appearance when
alive. It is very voracious, and preys on the fry
and lesser fish. It does not often take a bait, but is
generally caught in weels.

It abounds in the lake of *Geneva*, where it is called
Lota, and it is also met with in the *Lago Maggiore*,
and *Lugano*.

The largest that we ever heard was taken in our Deser.
waters weighed between two and three pounds, but
abroad they are sometimes found of double that
weight.

Their body has some resemblance to that of an
eel, only shorter and thicker, and its motions also
resemble those of that fish: they are besides very
smooth, slippery, and slimy.

The

164 SPOTTED WHISTLE FISH. Class IV.

The head is very ugly, being flat, and shaped like that of a toad: the teeth are very small, but numerous: the irides yellow.

On the end of the nose are two small beards; on the chin another: the number of its branchiostegous rays are seven.

The first dorsal fin is short: the second is placed immediately behind it, and extends almost to the tail: the pectoral fins are rounded: the ventral fins consist of six rays, of which the two first are divided near their ends from each other: the vent is placed in the middle of the belly, and the anal fin reaches almost to the tail: the tail is rounded at the end.

Color.

The color of this species varies; some are dusky, others of a dirty green, spotted with black, and oftentimes with yellow, and the belly in some is white; but the real colors are frequently concealed by the slime.

XV. The SPOTTED WHISTLE FISH.

Mustella vulgaris. *Rondel.* 281.

Gesner pisc. 89.

Sea Loches *Cestrie*, Whistle Fish

Cornubia. *Wil. Ictb.* 121.

Raii syn. pisc. 67. Rock-

ling, Mr. Jago, *Raii syn.*

pisc. 164. *fig.* 9.

THIS species commonly frequents the rocky shores of these islands, and is sometimes taken with a bait.

It grows to the length of one foot: the head is large and flat: the eyes not remote from the end of

Class IV. BROWN WHISTLE FISH. 165

of the nose: the body is long, slender, and compressed sideways, especially towards the tail: at the end of the upper jaw are two beards; on the chin one.

The teeth are numerous and small, disposed along the jaws in form of a broad plate: in the roof of the mouth is a set of small teeth, disposed in a triangular form.

The number of branchiostegous rays is seven.

The first dorsal fin is lodged in a deep furrow just beyond the head, and consist of a number of short unconnected rays: the second rises just behind it, and reaches very near the tail: the pectoral fins are broad and round: the ventral fins small; the second ray the longest: the anal fin reaches almost to the tail: the tail rounded at the end.

The scales are very small: the color of the body and head a reddish yellow, marked above the lateral line with large black spots: the back fin and tail are darker; the vent fin of a brighter red, but all are spotted. The lateral line bends in the middle, then passes strait to the tail.

XVI. The BROWN WHISTLE FISH.

Gadus dorso dipterygio, fulco magno ad pinnam dorsi primam, ore cirrato? Arted. Synon. 37.

Gadus mustela. G. dipterygius cirris 5, pinna dorsali priore exoleta. Lin. syst. 440. Gronov. Zooph. No. 314.

MR. Willoughby makes this species with five beards, a variety only of the former; but having opportunity of examining several specimens, we must dissent from his opinion, having always observed

served the number of beards in the spotted kind not to exceed three, nor the number in the brown kind to be less than five. The first ray of the first dorsal fin is very long. There is also some difference in the form as well as color, this species being rather thicker in proportion than the former.

Excepting these particulars, and the number of beards, there is a general agreement in the parts of both. The beards on the upper jaw are four, viz. Two at the very end of the nose, and two a little above them: on the end of the lower jaw is a single one.

These fish are of a deep olive brown, their belly whitish. They grow to the same size as the former.

The *Cornish* fishermen are said to whistle, and make use of the words *Bod, Bod vean*, when they are desirous of taking this fish, as if by that they facilitated the capture. In the same manner the *Sicilian* fishermen repeat their *Mamassu di pajanu*, &c. when they are in pursuit of the *Sword Fish**.

* *Vide p. 127.*

Genus XX. Head blunt at the end, and very steep.
 Body smooth and slippery.
 Teeth slender.
 Body compressed sideways.
 Ventral fins consisting generally of only
 two united rays. One dorsal fin.
 Six branchiostegous rays. BLENNY†.

*

With a crested head.

I. The CRESTED BLENNY.

Adonis, ou exocetus. <i>Belon.</i> 219.	Blennius crista capitis trans-
Galerita. <i>Rondel.</i> 204. <i>Gesner</i>	versa cutacea. <i>Arted. synon.</i>
<i>pisc.</i> 14, 17, 18.	44.
Alauda cristata, five Galerita.	Blennius Galerita. <i>Lin. syst.</i>
<i>Wil. Ichth.</i> 134. <i>Raii syn. pisc.</i>	441.
73.	

THIS species is found, tho' not frequently, on
 our rocky shores, and is commonly about four
 or five inches long.

On the head is a small crest-like fin, which it can
 erect or depress at pleasure. On the top of the
 head between the eyes is a triangular lump point-
 ing backwards, and red about its edges.

† There being no *English* name for this genus, *Blenny* is given
 it, derived from the word *Blennius*, the generical term used by
Artedius, who forms it from *Βλέννα mucus*, it being of a slimy
 nature.

The skin at the corner of the upper jaw is loose, and projects.

From the hind part of the head almost to the tail extends the dorsal fin: the ventral fin is small: the vent is placed under the ends of the pectoral fins.

The body is smooth and slippery: the color brown, and spotted.

II. The GATTORUGINE.

Scorpioides. *Rondel.* 204. *Ges-*
ner pisc. 847.

Gattorugine *Venetis.* *Wil. Ictb.*
132. *Raii syn. pisc.* 72.

Blennius pinnulis duabus ad

ad oculos, pinna ani officu-
lorum viginti trium. *Arted.*
synon. 44.

Blennius Gattorugine. *Lin. syst.*
442.

Place.

THIS curious kind was discovered to be a *British* fish, by the Rev. Mr. *Williams*, who found it on the *Anglesea* coast, and favored us with it.

Descr.

Its length was seven inches and an half: the body was smooth, and compressed on the sides: the belly a little prominent: the vent situated as in the preceding fish.

The teeth slender, almost setaceous, and very close set: between the eyes was a small hollow, and above each just on the summit was a narrow loose membrane, trifurcated at the top, which distinguishes this from all other species.

The pectoral fins broad and rounded, consisting of fourteen rays, which extend beyond the webs, making the edges appear scalloped.

The

The ventral fins like those of others of the genus : the dorsal fin consisted of fourteen strong spiny rays, and nineteen soft rays ; the last of which were higher than the spiny rays.

The anal fin had twenty-one rays : the ends in every fin extended beyond their webs.

The tail was rounded at the end, and consisted of twelve rays, divided towards their extremities.

This fish in general was of a dusky hue, marked across with wavy lines : the belly of a light-ash color.

The lower part of the pectoral fins, and the ends of the ventral fins, of an orange-color.

With a smooth head.

III. The SMOOTH BLENNY.

- | | |
|--|---|
| La tierce espece de Exocetus ? | <i>fis</i> , Smooth Shan. Mr. Jago |
| <i>Belon</i> . 219. | <i>apud Raii syn. pisc.</i> 164. fig. |
| Alauda non cristata. <i>Rondel.</i> | 10. |
| 205. <i>Gesner pisc.</i> 18. | Blennius maxilla superiore lon- |
| Mulgranoc, & Bulcard Cornu- | giore, capite summo acumi- |
| <i>biæ. Wil. lctb.</i> 133. <i>Raii syn.</i> | nato. <i>Arted. synon.</i> 45. |
| <i>pisc.</i> 73. | Blennius Pholis. <i>Lin. syst.</i> 443. |
| Cataphractus lævis Cornubien- | <i>Gronov. Zooph. No.</i> 259. |

WE discovered this species in plenty lying un- Place.
der the stones among the tang on the rocky
coasts of *Anglesea*, at the lower water-mark. It was
very active and vivacious, and would by the help

of its ventral fins creep up between the stones with great facility. It bit extremely hard, and would hang at ones finger for a considerable time. It was very tenacious of life, and would live for near a day out of water.

It feeds on shells and small crabs, whose remains we found in its stomach.

Descr.

The length in general was five inches: the head large, and sloping suddenly to the mouth: the irides red.

The teeth slender, very sharp, and close set: there were twenty-four in the upper, and nineteen in the lower jaw.

The pectoral fins broad and rounded, consisting of thirteen rays: the ventral fins of only two thick rays, separated near their ends.

The dorsal fin consisted of thirty-two soft rays, and reached from the hind part of the head almost to the tail.

The vent was in the middle of the body: the anal fin extended almost to the tail, and consisted of nineteen rays, tipped with white.

The tail rounded at the end, and composed of twelve branched rays.

The color varied, some were quite black, but generally they were of a deep olive, prettily marbled with a deeper color; others spotted with white: the last often disposed in rows above and beneath the lateral line.

IV. The SPOTTED BLENNY.

Gunnellus Cornubiensium, nonnullis *Butter-fish*, q. d. *Liparis*. *Wil. Ichth.* 115. *Raii syn. pisc.* 144.

Blennius maculis circiter decem nigris limbo albicante utrinque ad pinnam dorsalem. *Arted. synon.* 45.

Blennius Gunnellis. B. pinna

dorsali ocellis X nigris. *Lin. syst.* 443. *Faun. suec.* No. 318. *Seb. Mus.* iii. p. 91. *tab.* 30. *fig.* 6.

Pholis maculis annulatis ad pinnam dorsalem, pinnis ventralibus obsoletis. *Gronov. Zooph.* No. 267.

THIS species is found in the same place with the preceding, lurking like it under stones, is equally vivacious, and is used as a bait for larger fish.

Its length is six inches: the depth only half an inch: the sides very much compressed, and extremely thin.

The head and mouth is small; the last points upwards, and the lower jaw slopes considerably towards the throat.

The teeth are very small; the irides whitish.

The pectoral fins rounded, and of a yellow color: instead of the ventral fins are two minute spines.

The dorsal fin consist of seventy-eight short spiny rays, and runs the length of the back almost to the tail: on the top of the back are eleven round spots, which reach the lower half of the dorsal fin; they are black, half encircled with white.

The vent is in the middle of the body; the anal fin extends from it almost to the tail.

The tail is rounded, and of a yellow color.

The back and sides are of a deep olive: the belly whitish.

V. The VIVIPAROUS BLENNY.

Mustela marina vivipara, Ael-quappe, Ael-pute, Ael-moder. *Schonevelde*. 50. tab. 4. Guffer, Eelpout. *Sib. Scot.* iii. 25.

Mustela vivipara Schoneveldii. *Wil. Ictb.* 122. *Raii syn. pisc.* 69.

Blennius capite dorsoque fusco flavescente lituris nigris, pin-

na ani flava. Arted. synon. 45. *Blennius viviparus*, B. ore tentaculis duobus. *Lin. syst.* 443.

Tanglake. Faun. suec. No. 317. *Mus. Ad. Fr.* I. 69. tab. 32.

Enchelyopus corpore lituris variegato; pinna dorsi ad caudam sinuata. Gronov. Zooph. No. 265.

S*CHONEVELDE* first discovered this species; Sir Robert Sibbald afterwards found it on the *Scotch* coasts; and *Linnaeus* has described it in his account of his *Swedish* majesty's *Museum*.

We are unacquainted with this fish; but on the authority of Sir Robert Sibbald, give it a place in this work, borrowing our description from *Schonevelde* and *Linnaeus*.

They are viviparous, bringing forth two or three hundred young at a time. Their season of parturition is a little after the depth of winter. Before *Midsummer* they quit the bays and shores, and retire into the deep, where they are commonly taken. They are a very coarse fish, and eat only by the poor.

They

VIVIPAROUS BLENNY.



SPOTTED BLENNY.



SPOTTED GOBY.



Class IV. VIVIPAROUS BLENNY. 173

They are commonly about a foot in length, and of an eel-like form : their skin smooth and slippery. Descr.

At the nostrils are two small beards : the jaws are very rough : the covers of the gills open.

The dorsal fin commences at the hind part of the head, and reaches almost to the tail ; it consists of eighty rays.

The pectoral fins are rounded, and are composed of nineteen rays : the ventral fins of only four very short ones.

The anal fins extends to and unites with the tail, which is small, and ends in a sharp point.

The color of the back and head is a yellowish brown, stained with black strokes : the sides a little lighter : the belly of a dirty white : the dorsal fin marked in the same manner as the back.

Sect. III. THORACIC FISH.

Genus XXI. Eyes placed near each other.

Four branchiostegous rays.

Ventral fins united.

GOBY*.

I. The BLACK GOBY.

Gobio niger. Rondel. 200. Ges-
*ner pisc. 395.**Schwartzzer Goeb. Schonevelde.*
*36.**Sea Gudgeon. Rock-fish. Wil.*
*Ictb. 206. Raii syn. pisc. 76.**Gobius ex nigricante varius,**pinna dorsi secunda officu-*
lorum quatuor decim. Arted.
*synon. 46.**Gobius niger. Lin. syst. 449.**Eleotris capite cathetoplateo,*
pinnis ventralibus concretis,
Gronov. Zooph. No. 281.

IT is to this fish that Naturalists have given the synonym of *Kωβιος*, and *Gobio*, names of certain species mentioned by *Aristotle*, *Pliny*, and *Oppian*. The two first have not left any characters for us to distinguish them by; and *Oppian* at once shews that he never intended this kind, as he has placed it, among those which are armed with a poisonous spine. *Aristotle* was acquainted with two species; one a sea fish that frequented the rocks, another that was gregarious, and an inhabitant of rivers, which last seems to have been our common gudgeon,

* Formed from *Gobius*, the generic name bestowed by Naturalists on these fish.

This species grows to the length of six inches: Descr.
the body is soft, slippery, and of a slender form: the head is rather large; the cheeks inflated; the teeth small, and disposed in two rows: from the head to the first dorsal fin is a small sulcus.

The first dorsal fin consists of six rays; the second of fourteen; the pectoral fins of sixteen or seventeen, closely set together, and the middlemost the longest; the others on each side gradually shorter.

The ventral fins coalesce and form a sort of funnel, by which these fish affix themselves immoveably to the rocks, for which reason they are called *Rock-fish*.

The tail is rounded at the end.

The color is brown, or deep olive, mixed with dark streaks, and spotted with black: the dorsal and anal fins are of a pale blue, the rays marked with minute black spots.

II. The SPOTTED GOBY.

Aφυα? *Athen. lib. vii. p. 284.* *Gobius Aphyia et marfio dictus.*

Aphia. Belon. 207. *Arted. synon. 47.*

Aphyia cobites. Rondel. 210. *Gobius Aphyia. G. fasciis*

Gesner pisc. 67. Wil. pisc. 207. *etiam pinnarum fuscis. Lin.*

Raii syn. pisc. 76. *yst. 450.*

WE saw several of this species taken last summer on our sandy shores in the shrimp nets.

The length of the largest was not three inches: the nose was blunt: the eyes large and prominent, standing far out of the head: the irides sappharine; the head flat; the tongue large; teeth in both jaws.

The first dorsal fin consisted of six rays, the second of eleven, and placed at some distance from the other.

The ventral fins are united: the anal consist of eleven rays: the tail is even at the end.

The body is of a whitish color, obscurely spotted with ferruginous: the rays of the dorsal fins, and the tail, barred with the same color.

Genus XXII. Large flat head, armed with sharp spines.

Six branchiostegous rays.

BULL-HEAD.

I. The BULLHEAD.

Βούτος. *Arist. Hist. an. lib. iv.*
c. 8.

Chabot. *Belon. 213.*

Cottus. *Rondel. Fluviat. 202.*

Gobio capitatus. *Gesner pisc.*
401.

Een Miiller. *Schwenckfelt. Siles.*
431.

Bull-head, Miller's Thumb.
Wil. Ictb. 137. Raii syn.
pisc. 76.

Cottus alepedotus glaber, ca-
pite diacantho. *Arted. synon.*
76.

Cottus Gobio. C. lævis, ca-
pite spinis duabus. *Lin. syst.*
452.

Sten-simpa, Slagg-simpa. *Faun.*
suec. No. 323.

Koppe. *Kram. 384. Gronov.*
Zooph. No. 270.

THIS species is very common in all our clear brooks; it lies almost always at the bottom, either on the gravel or under a stone: it deposits its spawn in a hole it forms in the gravel, and quits it with great reluctance. It feeds on water insects; and we found in the stomach of one the remains of the fresh water shrimp, the *pulex aquatilis* of Ray.

This fish seldom exceeds the length of three inches and an half: the head large, broad, flat, and thin at its circumference, being well adapted for insinuating itself under stones: on the middle part of the covers of the gills is a small crooked spine turning inwards.

The

The eyes are very small: the irides yellow: the teeth very minute, placed in the jaws and the roof of the mouth.

The body grows slender towards the tail, and is very smooth.

The first dorsal fin consists of six rays, the second of seventeen: the pectoral fins are round, and prettily scalloped at their edges, and are composed of thirteen rays; the ventral of only four; the anal of thirteen; the tail of twelve, and is rounded at the end.

The color of this fish is as disagreeable as its form, being dusky, mixed with a dirty yellow: the belly whitish.

II. The P O G G E.

Cataphractus, Stein-bicker, Müller, Turfs-bull. *Schoneveldde*. 30. tab. 3.

Cataphractus *Schoneveldii* Septentr. *Anglis* a Pogge. *Wil. Ictb.* 211. *Raii syn. pisc.* 77.

Cottus cirris plurimis corpore octagono. *Arted. synon.* 77.

Cottus Cataphractus. C. lorincatus, rostro verrucoso 2 bifidis, capite subtus cirroso. *Lin. syst.* 451.

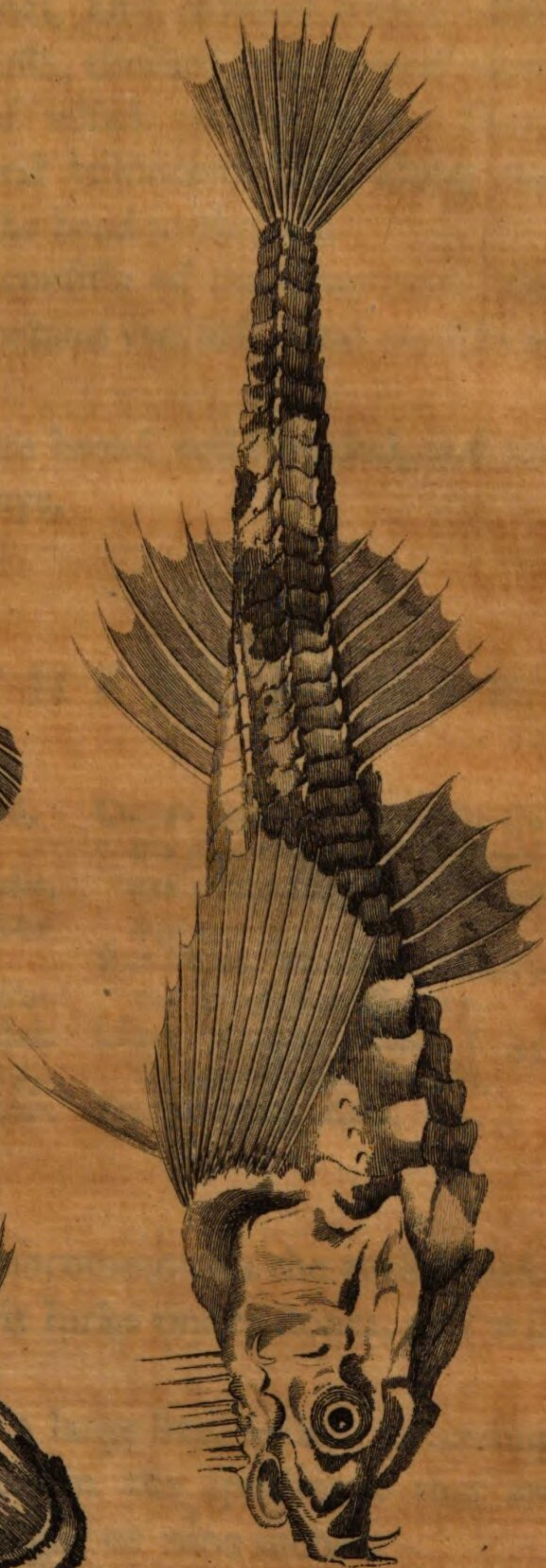
Botn-mus. *Faun. suec.* No. 324. *Seb. Mus.* iii. tab. 28. *Gronov. Zooph.* No. 271.

THE pogge is very common on most of the *British* coasts.

It seldom exceeds five inches and an half in length, and even seldom arrives at that size.

The head is large, bony, and very rugged: the end of the nose is armed with four short upright spines. on the throat are a number of short white beards.

The



BULL-HEAD.



BOOK

1811

The teeth are very minute, situated in the jaws.

The body is octagonal, and covered with a number of strong bony crusts, divided into several compartments, the ends of which project into a sharp point, and form several echinated lines along the back and sides from the head to the tail.

The first dorsal fin consists of six spiny rays: the second is placed just behind the first, and consists of seven soft rays.

The pectoral fins are broad and rounded, and are composed of fifteen rays.

III. The FATHER-LASHER.

Scorpios. *Ovid. Halieut.* 116.

La Scorpene. *Belon.* 242.

Scorpius marinus, Waelkuke, Buloffe, Schorp-fische. *Scho-nevelde.* 67. *tab.* 6.

Scorpænx *Belonii* similis *Cornub.* Father-lasher. *Wil. Ich.* 138. *Raii syn. pisc.* 145.

Scorpius virginianus. *Idem.* 142. *Wil. Ich. App.* 25.

Cottus scorpius. C. capite spinis pluribus, maxilla superiore paulo longiore. *Lin. syst.* 452.

Rot-simpa, Skrabba, Skialryta. *Faun. suec.* No. 323.

Ulke. *Crantz. Greenl.* I. 95. *Gronov. Zooph.* No. 268.

Sea Scorpion. *Edw.* 284.

THIS fish is not uncommon on the rocky coasts of this island: it lurks under stones, and will take a bait.

It does not grow to a large size, seldom exceeding (as far as we have seen in the specimens that are taken on our shores) eight or nine inches. Descr.

The head is very large, and has a most formidable appearance, being armed with vast spines, which it can

can oppose to any enemy that attacks it, by swelling out its cheeks and gill covers to a large size.

Et capitis duro nociturus Scorpions ietu.

The hurtful *Scorpion* wounding with its head.

Spines.

The nose and space contiguous to the eyes are furnished with short sharp spines: the covers of the gills are terminated by exceeding long ones, which are both strong and very sharp pointed.

The mouth is large: the jaws covered with rows of very small teeth: the roof of the mouth is furnished with a triangular spot of minute teeth.

The back is more elevated than that of others of this genus: the belly prominent: the side-line rough, the rest of the body very smooth, and grows slender towards the tail.

The first dorsal fin consists of eight spiny rays; the second of eleven high soft rays: the pectoral fins are large, and have sixteen; the ventral three; the anal eight: the tail is rounded at the end, and is composed of twelve bifurcated rays.

The color of the body is brown, or dusky and white marbled, and sometimes is found also stained with red: the fins and tail are transparent, sometimes clouded, but the rays barred regularly with brown: the belly is of a silvery white.

American.

This kind is very frequent in the *Newfoundland* seas, where it is called *Scolping*: it is also as common on the coast of *Greenland* in deep water near shore. It is a principal food of the natives, and the soup made of it is said to be agreeable as well as wholesome.

Genus

Genus XXIII. Body very deep, and compressed sideways.

Very long filaments issuing from the first dorsal fin.

Seven branchiostegous rays.

DOREE.

I. The D O R E E.

- | | |
|--|--|
| Χαλκίευσ. <i>Athen. lib. vii. 328.</i> | Zeus ventre aculeato, cauda in extremo circinato. <i>Arted. synon. 78.</i> |
| <i>Oppian Halieut. I. 133.</i> | |
| Faber ? <i>Ovid Halieut. 110.</i> | |
| Zeus idem Faber <i>Gadibus. Plin. lib. ix. c. 18.</i> | Zeus Faber. Z. cauda rotundata, lateribus mediis oculo fusco, pinnis analibus duabus. <i>Lin. syst. 454. Gronov. Zooph. No. 311.</i> |
| La Dorée. <i>Belon. 146.</i> | |
| Faber five Gallus marinus. <i>Rondel. 328. Gesner pisc. 369.</i> | |
| A Doree. <i>Wil. Ictb. 294. Raii syn pisc. 99.</i> | Zeus spinosus. <i>Mus. Fred. Ad. 67. tab. xxxi.</i> |

SUPERSTITION hath made the *Doree* rival to the *Hadock*, for the honor of having been the fish out of whose mouth St. *Peter* took the tribute-mony, leaving on its sides those incontestible proofs of the identity of the fish, the marks of his finger and thumb.

It is rather difficult at this time to determine on which part to decide the dispute; for the *Doree* likewise asserts an origin of its spots of a similar nature, but of a much earlier date than the former. St.

Christopher,

*Christopher**, in wading thro' an arm of the sea, having caught a fish of this kind *en passant*, as an eternal memorial of the fact, left the impressions on its sides to be transmitted to all posterity. Could this but be established, we should not hesitate to pronounce in favor of the hadock.

In our own country it was very long before this fish attracted our notice, at least as an edible one. We are indebted to that judicious actor and *bon vivant* the late Mr. *Quin*, for adding a most delicious fish to our table, who overcoming all the vulgar prejudices on account of its deformity, has effectually established its reputation.

Place.

This fish was supposed to be found only in the southern seas of this kingdom, but it has been discovered last year on the coast of *Anglesea*. Those of the greatest size are taken in the *Bay of Biscay* off the *French* coasts: they are also very common in the *Mediterranean*; *Ovid* must therefore have styled it *rarus Faber*, on account of its excellency not its scarcity.

Descr.

The form of this fish is hideous: its body is oval, and greatly compressed on the sides: the head large: the snout vastly projecting: the mouth very wide: the teeth very small.

The eyes great: the irides yellow.

* *Belon. Rondel.* also *Aldrowand de pisc.* 40. *St. Christopher* was of a *Colossal* stature, as is evident from his image in the church of *Notre Dame* at *Paris*, and a still larger at *Auxerre*: the last we think is near seventy feet high. His history is expressed in his name, *Χρῖστοςφορος*, being said to have carried our Saviour, when a child, over an arm of the sea.

The

The lateral line oddly distorted, sinking at each end, and rising near the back in the middle: beneath it on each side is a round black spot.

The first dorsal fin consists of ten strong spiny rays, with long filaments, reaching far beyond their ends: the second is placed near the tail, and consists of twenty-four soft rays, the middlemost of which are the longest.

The pectoral fins have fourteen rays, the ventral seven; the first spiny, the others soft: it has two anal fins; the first consists of four sharp spines, the second of twenty-two soft ones, and reaches very near the tail.

The tail is round at the end, and consists of fifteen branched rays.

The color of the sides are olive, varied with light blue and white, and while living is very resplendent, and as if gilt, for which reason it is called the *Doree*.

The largest fish we have heard of weighed twelve pounds. Size.

Genus XXIV. Body quite flat, and very thin.

Eyes, both on the same side the head.

Branchiostegous rays from four to seven. FLOUNDER.

*

With the eyes on the right side.

I. The H O L I B U T.

Hippoglossus. *Rondel.* 325. Pleuronectes oculis a dextris,
Gesner pisc. 669. totus glaber. *Arted. synon.* 31.

Heglbutte, Hilligbutte. *Scho- Pleuronectes Hippoglossus. Lin.*
newelde. 62. *syst.* 456.

Holibut, Septentr. *Anglis Tur- Halg-flundra. Faun. suec. No.*
bot. Wil. Ictb. 99. *Raii syn.* 329. *Gronov. Zooph. No.*
pisc. 33. 247.

Size.

THIS is the largest of the genus; some have been taken in our seas weighing from one to three hundred pounds; but much larger are found in those of *Newfoundland*, *Greenland*, and *Iceland*, where they are taken with a hook and line in very deep water. They are part of the food of the *Greenlanders**, who cut them into large slips, and dry them in the sun.

They are common in the *London* markets, where they are exposed to sale cut into large pieces. They

* *Crantz. Hist. Greenl.* I. 98.

are

are very coarse eating, excepting the part which adheres to the side fins, which is extremely fat and delicious, but surfeiting.

They are the most voracious of all flat fish. The last year there were two instances of their swallowing the lead weight at the end of a line, with which the seamen were founding the bottom from on board a ship, one off *Flamborough Head*, the other going into *Tinmouth Haven*: the latter was taken, the other disengaged itself.

The holibut, in respect to its length, is the narrowest of any of this genus except the sole. Descr.

It is perfectly smooth, and free from spines either above or below. The color of the upper part is dusky; beneath of a pure white. We do not count the rays of the fins in this genus, not only because they are so numerous, but because nature hath given to each species characters sufficient to distinguish them by.

These flat fish swim sideways; for which reason *Linnaeus* hath styled them *Pleuronectes*.

II. The W H I F F.

Passer Cornubiensis asper, magno oris hiatu. Mr. Jago. Raii syn. pisc. 163. fig. 2.

BY the figure Mr. *Jago* has left of this species, it bears a great resemblance to the holibut. He calls it the *Whiff*, and says its mouth is large, its skin hard and rough, its color a dirty ash, and its flesh coarse and good for nothing. The skin appears to be much spotted, and the lateral line greatly incurvated at the beginning, and afterwards proceeding in a strait direction to the tail.

III. The P L A I S E.

Plateffa? Ausonii Epist. ad.

Theon. 62.

Le Quarlet. Belon. 139.

Quadratus. Rondel. 318. Gesner pisc. 665.

Scholle, Pladise. Schonevelde. 61.

Plaife. Wil. Ictb. 96. Raii syn. pisc. 31.

Pleuronectes oculis et tuberculis sex a dextra capitis, lateribus glabris, spina ad anum. Arted. synon. 30.

Pleuronectes Plateffa. Lin. syst. 456. Gronov. Zooph. No. 246.

Skalla, Rodsputta. Faun. suec. No. 328.

THESE fish are very common on most of our coasts, and sometimes taken of the weight of fifteen pounds; but they seldom reach that size, one of eight or nine pounds being reckoned a large fish.

The

The best and largest are taken off *Rye*, on the coast of *Sussex*, and also off the *Dutch* coasts. They spawn in the beginning of *February*.

They are very flat, and much more square than the preceding. Behind the left eye is a row of six tubercles, that reaches to the commencement of the lateral line.

The upper part of the body and fins is of a clear brown, marked with large bright orange-colored spots: the belly is white.

IV. The F L O U N D E R.

Le Flez. *Belon*. 141.

Passeris tertia species. *Rondel*.

319. *Gesner pisc*. 666, 670.

Struff-butte. *Schonevelde*. 62.

Flounder, Fluke, or But. *Wil*.

Ictb. 980. *Raii syn. pisc*. 32.

Pleuronectes oculis a dextris,
linea laterali aspera, spinulis

supiné ad radices pinnarum,
dentibus obtusis. *Arted. synon*.

31.

Pleuronectes Flesus. *Lin. syst*.

457. *Gronov. Zooph*. No. 248.

Flundra, *Slatt-skadda*. *Faun*.

Suec. No. 327.

THE flounder inhabits every part of the *British* sea, and even frequents our rivers at a great distance from the salt waters; and for this reason some writers call it the *Passer fluviatilis*. It never grows large in our rivers, but is reckoned sweeter than those that live in the sea. It is inferior in size to the plaise, for we never heard of any that weighed more than six pounds.

It may very easily be distinguished from the plaise, *Descr.* or any other fish of this genus, by a row of sharp small spines that surround its upper sides, and are

placed just at the junction of the fins with the body. Another row marks the side-line, and runs half way down the back.

The color of the upper part of the body is a pale brown, sometimes marked with a few obscure spots of dirty yellow: the belly is white.

We have met with a variety of this fish with the eyes and lateral line on the left side. *Linnaeus* makes a distinct species of it under the name of *Pleuronectes Passer*, p. 459; but since it differs in no other respect from the common kind, we agree with Doctor *Gronovius* in not separating them.

V. The D A B.

La Limande. *Belon*. 142.

Passer asper, five *squamosus*.

Rondel. 319. *Gesner pisc*. 665.

Dab. *Wil. Ictb*. 97. *Raii syn. pisc*. 32.

Pleuronectes oculis a dextra, squamis asperis, spina ad

anum, dentibus obtusis. *Arted. synon*. 33.

Pleuronectes Limanda. Pl. oculis dextris, squamis ciliatis, spinulis ad radicem pinna- rum dorsi, anique. *Lin. syst*. 457.

THE dab is found with the other species, but is less common. It is in best season during *February*, *March*, and *April*: they spawn in *May* and *June*, and become flabby and watery the rest of the summer. They are superior in goodness to the plaice and flounder, but far inferior in size.

Descr.

It is generally of an uniform brown color on the upper side, tho' sometimes clouded with a darker. The scales are small and rough, which is a character

ter of this species. The lateral line is extremely incurvated at the beginning, then goes quite strait to the tail. The lower part of the body is white.

VI. The S M E A R - D A B.

Rhombus lævis Cornubiensis
maculis nigris, a Kit. Mr.

Jago. Raii syn. pisc. 162.
fig. 1.

WE found one of this species at a fishmonger's in *London* last winter, where it is known by the name of the smear-dab.

It was a foot and an half long, and eleven inches broad between fin and fin on the widest part.

The head appeared very small, as the dorsal fin began very near its mouth, and extended very near to the tail. It consisted of seventy nine rays.

The eyes were pretty near each other. The mouth full of small teeth.

The lateral line was much incurvated for the first two inches from its origin, then continued strait to the tail.

The back was covered with small smooth scales, was of a light brown color, spotted obscurely with yellow. The belly white, and marked with five large dusky spots.

It was a fish of goodness equal to the common dab.

VII. The S O L E.

Βαγλωσσος. *Athen. lib. viii. p.*288. *Oppian Halieut. l. 99.*La Sole. *Belon. 142.*Buglossus. *Rondel. 320. Gesner pisc. 666.*Tungen. *Schonevelde. 63.*

Pleuronectes oculis a sinistra corpore oblongo, maxilla

superiore longiore, squamis utrinque asperis. *Arted. syn. 32.*Pleuronectes Solea. *Lin. syst. 457. Gronov. Zooph. No. 251.*Tunga, Sola. *Faun. suec. No. 326.*

THE sole is found on all our coasts, but those on the western shores are much superior in size to those of the north. On the former they are sometimes taken of the weight of six or seven pounds, but towards *Scarborough* they rarely exceed one pound; if they reach two, it is extremely uncommon.

They are usually taken in the trawl-net: they keep much at the bottom, and feed on small shell fish.

Descr.

It is of a form much more narrow and oblong than any other of the genus. The irides are yellow; the pupils of a bright sappharine color: the scales are small, and very rough: the upper part of the body is of a deep brown: the tip of one of the pectoral fins black: the under part of the body is white: the lateral line strait: the tail rounded at the end.

It is a fish of a very delicate flavor; but the small soles are much superior in goodness to large ones,

ones*. The chief fishery for them is at *Blixham*, and in *Torbay*.

VIII. The SMOOTH SOLE.

Solea? *Ovid. Halieut.* 124.
Arnoglossus seu *Solea lævis*.

Wil. Ictb. 102. *Raii syn. pisc.*
34.

THIS, as described by Mr. *Ray*, (for we have not seen it) is extremely thin, pellucid, and white, and covered with such minute scales, and those instantly deciduous, as to merit the epithet smooth.

It is a scarce species, but is found in *Cornwall*, where, from its transparency, it is called the *Lantern Fish*.

It is probable that *Ovid* intended this species, by his *Solea*; for the common kind does by no means merit his description.

Fulgentes SOLEÆ candore.

And *Soles* with white resplendent.

* By the antient laws of the *Cinque* ports, no one was to take soles from the 1st of *November* to the 15th of *March*; neither was any body to fish from sun-setting to sun-rising, that the fish might enjoy their night-food.

**

With the eyes on the left side.

IX. The T U R B O T.

Rhombus. *Ovid. Halieut.*

Le Turbot. *Belon. 134.*

Rhombus, aculeatus. *Rondel.*

310. *Gesner pisc. 661.*

Steinbutt, Torbutt, Treen-

butt, Dornbutt. *Schone-*

velde. 60.

Turbot. in the north a Bret.

Wil. Ichth. 94.

Rhombus maximus asper non

squamosus. *Raii syn. pisc. 31.*

Pleuronectes oculis a sinistra,

corpore aspero. *Arted. synon.*

32.

Pleuronectes maximus. *Lin.*

syst. 459. Gronov. Zooph. No.

254.

Butta. *Faun. suec. No. 325.*

Size,

TURBOTS grow to a very large size; we have seen them of three and twenty pounds weight, but have heard of some that weighed thirty. They are taken chiefly off the north coast of *England*, and others off the *Dutch* coast; but we believe the last has, in many instances, more credit than it deserves for the abundance of its fish.

Fishery.

The large turbot, and several other kinds of flat fish, are taken by the hook and line, for they lye in deep water: the method of taking them in wares, or staked nets, is too precarious to be depended on for the supply of our great markets, because it is by meer accident that the great fish stray into them.

It is a misfortune to the inhabitants of many of our fishing coasts, especially those of the north part of *North Wales*, that they are unacquainted with the
most

most successful means of capture : for their benefit, and perhaps that of other parts of our island, we shall lay before them the method practised by the fishermen of *Scarborough*, as it was communicated to us by Mr. *Travis*.

When they go out to fish, each person is provided with three lines. Each man's lines are fairly coiled upon a flat oblong piece of wicker-work ; the hooks being baited, and placed very regularly in the centre of the coil. Each line is furnished with 14 score of hooks, at the distance of six feet two inches from each other. The hooks are fastened to the lines upon snoods of twisted horse-hair, 27 inches in length. Lines.

When fishing there are always three men in each coble, and consequently nine of these lines are fastened together, and used as one line, extending in length near three miles, and furnished with 2520 hooks. An anchor and a buoy are fixed at the first end of the line, and one more of each at the end of each man's lines ; in all four anchors, which are commonly perforated stones, and four buoys made of leather or cork. The line is always laid across the current. The tides of flood and ebb continue an equal time upon our coast, and when undisturbed by winds run each way about six hours. They are so rapid that the fishermen can only shoot and haul their lines at the turn of tide ; and therefore the lines always remain upon the ground about six hours*. The same rapidity of tide prevents their using hand-

* In this space the *myxine glutinosa* of *Linnaeus*, will frequently penetrate the fish that are on the hooks, and entirely devour them, leaving only the skin and bones.

lines; and therefore two of the people commonly wrap themselves in the sail, and sleep while the other keeps a strict look-out, for fear of being run down by ships, and to observe the weather. For storms often rise so suddenly, that it is with extreme difficulty they can sometimes escape to the shore, leaving their lines behind.

Coble.

The coble is 20 feet 6 inches long, and 5 feet extreme breadth. It is about one ton burthen, rowed with three pair of oars, and admirably constructed for the purpose of encountering a mountainous sea: they hoist sail when the wind suits.

The five-men boat is 40 feet long and 15 broad, and of 25 tons burthen: it is so called, tho' navigated by six men and a boy, because one of the men is commonly hired to cook, &c. and does not share in the profits with the other five. All our able fishermen go in these boats to the herring fishery at *Yarmouth* the latter end of *September*, and return about the middle of *November*. The boats are then laid up until the beginning of *Lent*, at which time they go off in them to the edge of the *Dogger*, and other places, to fish for turbot, cod, ling, skates, &c. They always take two cobs on board, and when they come upon their ground, anchor the boat, throw out the cobs, and fish in the same manner as those do who go from the shore in a coble, with this difference only; that here each man is provided with double the quantity of lines, and instead of waiting the return of tide in the coble, return to the boat and bait their other lines; thus hawling one set, and shooting another every turn of tide. They commonly

commonly run into harbour twice a week to deliver their fish. The five-men boat is decked at each end, but open in the middle, and has two large lug-sails.

The best bait for all kinds of fish is fresh herring Bait. cut in pieces of a proper size; and notwithstanding what has been said to the contrary, they are taken here at any time in the winter, and all the spring, whenever the fishermen put down their nets for that purpose. The five-men boats always take some nets for that end. Next to herrings are the lesser lampreys*, which come all winter by land-carriage from *Tadcaster*. The next baits in esteem are small haddocks cut in pieces, sand worms, muscles, and limpets (called here *Flidders*;) and lastly, when none of these can be had they use bullock's liver. The hooks used here are much smaller than those employed at *Iceland* and *Newfoundland*. Experience has shewn that the larger fish will take a living small one upon the hook, sooner than any bait that can be put on; therefore they use such as the small fish can swallow. The hooks are two inches and an half long in the shank, and near an inch wide between the shank and the point. The line is made of small cording, and is always tanned before it is used.

Turbots, and all the rays, are extremely delicate in their choice of baits. If a piece of herring or haddock has been twelve hours out of the sea, and then used as bait, they will not touch it.

* The *Dutch* also use these fish as baits in the turbot fishery, and purchase annually from the *Thames* fishermen as much as amounts to 700*l.* worth, for that purpose.

This and the pearl are of a remarkable square form : the color of the upper part of the body is cinereous, marked with numbers of black spots of different sizes : the belly is white : the skin is without scales, but greatly wrinkled, and mixed with small short spines, dispersed without any order.

X. The P E A R L.

La Barbue. *Belon.* 137.

Rhombus lævis. *Rondel.* 312.

Gesner pisc. 662.

Schlichtbutt. *Schonevelde.* 60.

Rhombus non aculeatus squa-

mosus the Pearl. *Londinens.*

Cornub. Lug-aleaf. Wil. Ictb.

95. *Raii syn. pisc.* 31.

Pleuronectes oculis a sinistris,
corpore glabro. *Arted. syn.*
31.

Pleuronectes Rhombus. *Lin.*
syft. 458. *Gronov. Zooph. No.*
249.

Pigghvarf. *It wgoth.* 178.

IT is frequently found in the *London* markets, but is inferior to the turbot in goodness as well as size.

The irides are yellow : the skin is covered with small scales, but is quite free from any spines or inequalities.

The upper side of the body is of a deep brown, marked with spots of dirty yellow : the under side is of a pure white.

Genus XXV. Covers of the gills scaly.

Five branchiostegous rays.

Fore teeth sharp.

Grinders flat.

One dorsal fin, reaching the whole length of the back.

Forked tail.

GILT-HEAD.

I. The GILT-HEAD.

Χρυσόφρυς. *Oppian Halieut.*

I. 169.

Chrysophrys. *Ovid. Halieut.* iii.

Aurata *Plinii. lib.* ix. c. 16.

La Dorade. *Belon.* 186. Chrysophry *Caii opus.* 112.

Aurata. *Rondel.* 115. *Gesner pisc.* 110. 112.

Gilt-head or Gilt-poll. *Wil.*

Ictb. 307. *Raii syn. pisc.*

131.

Sparus dorso acutissimo, linea arcuata inter oculos. *Arted.*

synon. 63.

Sparus lunula aurea inter oculos. *Lin. syst.* 467.

Gronov. Zooph. No. 220.

THIS is one of the *pisces saxatiles*, or fish that haunt deep waters on bold rocky shores: those that form this genus, as well as the following, feed chiefly on shell fish, which they comminute with their teeth before they swallow; the teeth of this genus in particular being extremely well adapted for that purpose, the grinders being flat and strong, like those of certain quadrupeds: besides those are certain bones in the lower part of the mouth, which assist in grinding their food.

They

They are but a coarse fish; nor did the *Romans* hold them in any esteem, except they had fed on the *Lucrine* oyster.

*Non omnis laudem pretiumque AURATA meretur,
Sed cui solus erit concha LUCRINA cibus*.*

No praise, no price a *Gilt-head* e'er will take,
Unfed with oysters of the *Lucrine* lake.

Deser.

They grow to the weight of ten pounds: the form of the body is deep, not unlike that of a bream: the back is very sharp and of a dusky green color: the irides of a silvery hue: between the eyes is a femilunar gold color'd spot, the horns of which point towards the head: on the upper part of the gills is a black spot, beneath that another of purple.

The dorsal fin extends almost the whole length of the back, and consists of twenty-four rays, the eleven first spiny, the others soft: the pectoral fins consist of seventeen soft rays; the ventral of six rays, the first of which is very strong and spiny: the anal fin of fourteen; the three first spiny.

The tail is much forked.

Color.

It takes its name from its predominant color; that of the forehead and sides being as if gilt, but the last is tinged with brown.

* *Martial. lib. xiii. ep. 90.*

II. The S E A B R E A M.

Pagur? *Ovid. Halieut.* 107.Le Pagrus. *Belon.* 245.Pagrus. *Rondel.* 142. *Gesner.*
pisc. 656.Sea Bream. *Wil. Ictb.* 312.
Raii syn. pisc. 131.Sparus rubescens, cute ad ra-
dicem pinnarum dorsi et ani
in finem producta. *Arted.*
synon. 64.Sparus Pagrus. *Lyn. syst.* 469.

THIS species grows to a size equal with that of Descr.
the former: its shape and the figure of the
teeth are much the same.

The irides are silvery: the inside of the covers of
the gills, the mouth, and the tongue, are of a fine
red.

At the base of the pectoral fins is a ferruginous
spot.

What is peculiar to this species is, that the skin
at the end of the dorsal and anal fins is gathered up,
and hides the last rays.

The scales are large: the tail forked.

The color of the whole body is red,

Color,

III. The LESSER SEA BREAM.

Brama marina cauda forcipata D. *Jonston. Raii syn. pisc.* 115.

THIS species was communicated to Mr. *Ray* by his friend Mr. *Jonston*, a *Yorkshire* gentleman, who informed him it was found on the sands near the mouth of the *Tees*, *Sept.* 18, 1681.

It was a deep fish, formed like a roch, twenty-six inches long, ten broad, and grew very slender towards the tail.

The eyes large, like those of quadrupeds. In the lower jaw were two rows of teeth, in the upper a single row of small ones. The aperture of the gills very large, and like those of a salmon: the body scaly.

In the middle of the back was one fin extending almost to the tail; behind the vent another.

The back black; the sides of a brighter color; the belly quite of a silvery brightness.

Genus XXVI. Deep body.
 Very minute scales.
 Setaceous teeth on the tongue only.
 One long dorsal fin. OPAH.

I. The O P A H.

Opah, or King-Fish. *Phil. Transf. Abridg. vol. xi. 879. tab. v.*

WE have only four instances of this fish being taken in our seas, each of them in the North, viz. twice off Scotland*, once off Northumberland, and once in Filey-Bay, Yorkshire. This last was caught about two years ago, and exhibited as a shew at Scarborough.

It is of that genus which *Linnæus* distinguishes by the name of *Chætodon*, from its bristly teeth, and is said to be very common on the coast of Guinea.

It is well described by an anonymous writer in the *London Magazine* for October, 1767, which we shall borrow, as the account is confirmed to us by Mr. Travis, who had an opportunity of examining one of the same species.

Newcastle, Sept. 12. On Saturday last was thrown upon the sands at Blyth, a very rare and beautiful fish, weighing between seventy and eighty pounds**,

* The fish engraved by Sir Robert Sibbald, *Hist. Scot. tab. 6.* and thus described, is of this kind. *Piscis maculis aureis aspersus non scriptus, pollices 42 longus.*

** That described in the *Philosophical Transactions* weighed eighty-two pounds.

shaped like the sea bream. The length was three feet and an half; the breadth from back to belly almost two feet; but the thickness from side to side not above six inches.

The mouth small for the size of the fish, forming a square opening, and without any teeth in the jaws. The tongue thick, resembling that of a man, but rough and thick set with beards or prickles, pointing backwards, so that any thing might easily pass down, but could not easily return back, therefore these might serve instead of teeth to retain its prey*. The eyes remarkably large, covered with a membrane, and shining with a glare of gold. The cover of the gills like the salmon.

The body diminishes very small to the tail, which is forked, and expands twelve inches: the gill fins are broad, about eight inches long, and play horizontally: a little behind their insertion the back fin takes its original, where it is about seven inches high, but slopes away very suddenly, running down very near the tail, and at its termination becomes a little broader: the belly fins are very strong, and placed near the middle of the body: a narrow fin also runs from the anus to the tail.

All the fins, and also the tail, are of a fine scarlet; but the colours and beauty of the rest of the body, which is smooth and covered with almost imperceptible scales, beggars all description; the upper part being a kind of bright green, variegated with whi-

* The writer omitted the description of the tongue and its setaceous teeth, which we supply from the *Transactions*.

fish spots, and enriched with a shining golden hue, much resembling the splendor of the peacock's feathers; this by degrees vanishes in a bright silver; and near the belly the gold begins again to predominate in a lighter ground than on the back.

Genus XXVII. Covers of the gills scaly.

Branchiostegous rays unequal in number*.

Teeth conic, long and blunt at their ends. One tuberculated bone in the bottom of the throat: two above opposite to the other.

One dorsal fin reaching the whole length of the back: a slender skin extending beyond the end of each ray.

Rounded tail.

WRASSE.

I. The W R A S S E.

Vieille, Poule de mer, Gallot, une Rosse. *Belon*. 248.

Turdorum undecimum genus. *Rondel*. 179. *Gesner pisc*. 1019.

Turdus vulgatissimus. *Wil. Ich*. 319.

Wrasse, or Old Wife. *Raii syn. pisc*. 136.

Labrus rostro sursum reflexo cauda in extremo circulari.

Arted. synon. 56.

Labrus Tinca. Lin. syst. 477.

THIS species is found in deep water adjacent to the rocks. It will take a bait, tho' its usual food is shell-fish, and small crustacea.

* *Linnaeus* says six: this species had only four; the second, six; the third and fourth, five. We also find the same variation in the rays of the fins, the numbers being different in fish of the same species, not only of this but of other genera.

It grows to the weight of four or five pounds : it bears some resemblance to a carp in the form of the body, and is covered with large scales.

The nose projects ; the lips are large and fleshy, and the one turns up, the other hangs down : the mouth is capable of being drawn in or protruded.

Teeth.

The irides are red : the teeth are disposed in two rows ; the first are conic, the second very minute, and as if supporters to the others : in the throat just before the gullet are three bones, two above of an oblong form, and one below of a triangular shape ; the surface of each rising into roundish protuberances : these are of singular use to the fish, to grind its shelly food before it arrives at the stomach.

The dorsal fin consists of sixteen sharp and spiny rays, and nine soft ones, which are much longer than the others.

The pectoral fins large and round, and are composed of fifteen rays.

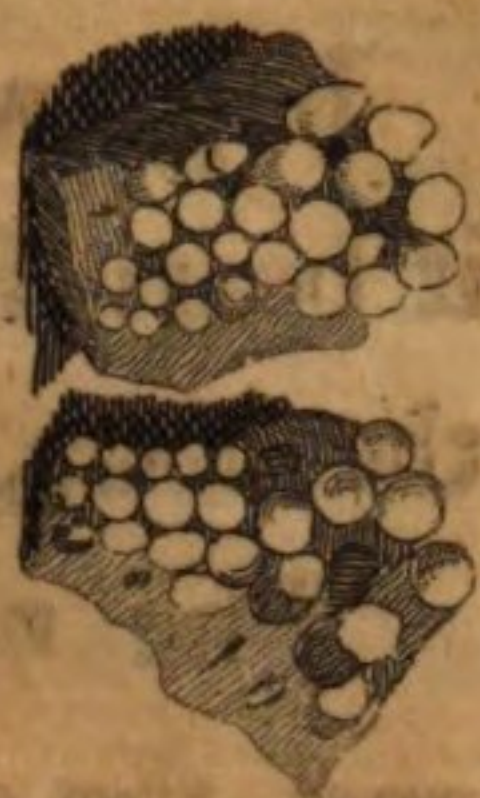
The ventral of six ; the first sharp and strong : the anal of three sharp spines, and nine flexible.

The tail is rounded at the end, and is formed of fourteen soft branching rays.

The lateral line much incurvated near the tail.

Color.

These fish vary infinitely in color : we have seen them of a dirty red, mixed with a certain duskiness ;
others



J. Wilkinson del

J. Mayall sculp

others most beautifully striped, especially about the head, with the richest colors, such as blue, red, and yellow. Most of this genus are subject to vary; therefore care must be taken not to multiply the species from these accidental tints, but to attend to the form which never alters.

The *Welch* call this fish *Gwrack*, or the old wo- Name, man; the *French*, *la Vieille*; and the *English* give it the name of *Old Wife*. Why they all agree in these synonyms it is difficult to assign a reason, except one too ill-bred and malignant to pollute our page.

II. The BIMACULATED WRASSE.

Labrus bimaculata. L. pinna ad caudam. *Lin. syst.* 477.
dorsali ramentacea, macula *Sciæna bimaculata*. *Mus. Ad.*
fusca in latere medio, et *Fred. I. 66. tab. xxxi. fig. 66.*

MR. *Brunnich* observed this species at *Penzance*, and referred me to *Linnaeus's* description of it in the *Museum Ad. Fred.* where it is described under the name of *Sciæna Bimaculata*.

The body is pretty deep, and of a light color, Descri, marked in the middle on each side with a round brown spot; on the upper part of the base of the tail is another: the lateral line is incurvated.

The branchiostegous rays are six in number*: the first fifteen rays of the dorsal fin are spiny; the other eleven soft, and lengthened by a skinny appendage: the pectoral fins consist of fifteen rays; the ventral

* *Linnaeus*, in his last edition, has removed this species from the genus of *Sciæna*, to that of *Labrus*, tho' it does not agree with the last in his number of branchiostegous rays.

of six; the first spiny; the second and third ending in a slender bristle: the anal fin is pointed; the four first rays being short and spiny; the rest long and soft.

III. The TRIMACULATED WRASSE.

THE species we examined was taken on the coast of *Anglesea*; its length was eight inches.

It was of an oblong form; the nose long; the teeth slender; the fore teeth much longer than the others.

The eyes large: branchiostegous rays, five.

The back fin consisted of seventeen spiny rays, and thirteen soft ones; beyond each extended a long nerve.

The pectoral fins were round, and consisted of fifteen branched rays.

The ventral fins consisted of six rays; the first spiny.

The anal fin of twelve; the three first short, [very strong, and spiny; the others soft and branched.

The tail was rounded.

The lateral line was strait at the beginning of the back, but grew incurvated towards the tail.

The body covered with large red scales; the covers of the gills with small ones.

On each side of the lower part of the back fin were two large spots, and between the fin and the tail another.

IV. The

IV. The STRIPED WRASSE.

THIS was taken off the *Skerry Isles*, on the coast of *Anglesea*; its length was ten inches.

The form was oblong, but the beginning of the back a little arched: the lips large, double, and much turned up: the teeth like those of the preceding: branchiostegous rays, five. Descr.

The number of rays in the back, pectoral, and ventral fins, the same as in those of the former.

In the anal fin were fifteen rays; the three first strong and spiny.

The tail almost even at the end, being very little rounded: the covers of the gills cinereous, striped with fine yellow.

The sides marked with four parallel lines of greenish olive, and the same of most elegant blue. Color.

The back and belly red; but the last of a much paler hue, and under the throat almost yellow.

Along the beginning of the back fin was a broad bed of rich blue; the middle part white; the rest red.

At the base of the pectoral fins was a dark olive spot.

The ends of the anal fin, and ventral fins, a fine blue.

The upper half of the tail blue; the lower part of its rays yellow.

V. The

V. The GIBBOUS WRASSE.

THIS species was taken off *Anglesea*: its length was eight inches; the greatest depth three: it was of a very deep and elevated form, the back being vastly arched, and very sharp or ridged.

From the beginning of the head to the nose, was a steep declivity.

The teeth like those of the others.

The eyes of a middling size; above each a dusky semilunar spot.

The nearest cover of the gills finely serrated.

The sixteen first rays of the back strong and spiny; the other nine soft and branched.

The pectoral fins consisted of thirteen, the ventral of six rays; the first ray of the ventral fin was strong and sharp.

The anal fin consisted of fourteen rays, of which the three first were strongly aculeated.

The tail was large, rounded at the end, and the rays branched; the ends of the rays extending beyond the webs.

The lateral line was incurvated towards the tail.

The gill covers and body covered with large scales.

Color.

The first were most elegantly spotted, and striped with blue and orange, and the sides spotted in the same manner; but nearest the back the orange was disposed in stripes: the back fin and anal fin were of a sea green, spotted with black.

The

The ventral fins and tail a fine pea green.

The pectoral fins yellow, marked at their base with transverse stripes of red.

VI. The G O L D S I N N Y.

Goldfinny *Cornubiensium*. Mr. Jago. *Raii syn. pisc.* 163. fig. 3.

THIS and the two following species were discovered by Mr. Jago on the coast of *Cornwall*: we never had an opportunity of examining them, therefore are obliged to have recourse to his descriptions, retaining their local names.

In the whole form of the body, lips, teeth, and fins, it resembles the *Wrasse*: it is said never to exceed a palm in length: near the tail is a remarkable black spot: the first rays of the dorsal fin are tinged with black.

The *Melanurus* of *Rondeletius* (adds he) takes its name from the black spot near the tail; but in many instances it differs widely from this species, the tail of the first is forked, that of the *Goldfinny* is even at the end.

VII. The C O M B E R.

Comber *Cornub. Raii syn. pisc. 163. fig. 5.*

THE comber is a small scaly fish, with the skin of a vermilion color. By the figure it is of an oblong form, and the tail rounded.

VIII. The C O O K.

Cook (*i. e. coquus*) *Cornubiensium. Raii syn. pisc. 163. fig. 4.*

THIS species, Mr. *Jago* says, is sometimes taken in great plenty on the *Cornish* coasts. It is a scaly fish, and does not grow to any great size. The back is purple and dark blue; the belly yellow. By the figure it seems of the same shape as the comber, and the tail rounded.

Besides these species we recollect seeing taken at the *Giants Causeway* in *Ireland*, a most beautiful kind of a vivid green, spotted with scarlet; and others at *Bandooran*, in the county of *Sligo*, of a pale green. We were at that time inattentive to this branch of natural history, and can only say they were of a species we have never since seen.

Genus XXVIII, The edges of the gill-covers
ferrated.

Seven branchiostegous rays.

Body covered with rough scales.

First dorsal fin spiny; the second
soft*,

PERCH.

I. The P E R C H.

Πέρχνη <i>Arist. Hist. an. lib. vi.</i> c. 14.	<i>Perca lineis utrinque sex trans-</i> <i>versis nigris, pinnis ventra-</i> <i>libus rubris. Arted. synonym. 66.</i>
<i>Perca Ausonii Mosella. 115.</i>	
Une Perche de riviere. <i>Belon.</i> 291.	<i>Perca fluviatilis. P. pinnis dor-</i> <i>salibus distinctis, secunda ra-</i> <i>diis sedecim. Lin. syst. 481.</i>
<i>Perca fluviatilis. Rondel. fluviat.</i> 196. <i>Gesner. pisc. 698.</i>	<i>Gronov. Zooph. No. 301.</i>
Ein Barfs. <i>Schonevelde. 55.</i>	<i>Abborre. Faun. suec. No. 332.</i>
A Perch. <i>Wil. Ictb. 291. Raii</i> <i>syn. pisc. 97.</i>	<i>Perchling, Barschieger. Kram.</i> <i>384. Wulff Boruss. No. 27.</i>

THE perch of *Aristotle* and *Ausonius* is the
same with that of the moderns. That men-
tioned by *Oppian*, *Pliny*, and *Athenæus* **, is a sea-
fish probably of the *Labrus* or *Sparus* kind, being
enumerated by them among some congenerous spe-
cies. Our perch was much esteemed by the Ro-
mans :

Nec te delicias mensarum Perca, filebo
Amnigenos inter pisces dignande marinis.

AUSONIUS.

* The *Ruffe* is an exception, having only one dorsal fin, but
the fourteen first rays of it are spiny.

** *Oppian Halieut. I, 124. Plinii lib. ix. c. 16. Athenæus*
lib. vii. p. 319.

It

It is not less admired at present as a firm and delicate fish; and the *Dutch* are particularly fond of it when made into a dish called *Water Souchy*.

It is a gregarious fish, and loves deep holes and gentle streams. It is a most voracious fish, and eager biter: if the angler meets with a shoal of them, he is sure of taking every one.

It is a common notion that the pike will not attack this fish, being fearful of the spiny fins which the perch erects on the approach of the former. This may be true in respect to large fish; but it is well known the small ones are the most tempting bait that can be laid for the pike.

The perch is a fish very tenacious of life: we have known them carried near sixty miles in dry straw, and yet survive the journey.

Size.

These fish seldom grow to a large size: we once heard of one that was taken in the *Serpentine* river, *Hyde-Park*, that weighed nine pounds, but that is very uncommon.

Descr.

The body is deep: the scales very rough: the back much arched.

The irides golden: the teeth small, disposed in the jaws and on the roof of the mouth: the edges of the covers of the gills ferrated: on the lower end of the largest is a sharp spine.

The first dorsal fin consists of fourteen strong spiny rays; the second of sixteen soft ones: the pectoral fins are transparent, and consist of fourteen rays; the ventral of six; the anal of eleven.

The tail is a little forked.

The

The colors are beautiful: the back and part of the sides being of a deep green, marked with five broad black bars pointing downwards: the belly is white, tinged with red: the ventral fins of a rich scarlet; the anal fins and tail of the same color, but rather paler.

In a lake called *Llyn Raithlyn*, in *Merionethshire*, is a very singular variety of perch: the back is quite hunched, and the lower part of the back bone, next the tail, strangely distorted: in color, and in other respects, it resembles the common kind, which are as numerous in the lake as these deformed fish. They are not peculiar to this water, for *Linnaeus* takes notice of a similar variety found at *Fablun*, in his own country.

Crooked
Perch.

II. The B A S S E.

Λάβραξ? *Arist. Hist. an. lib.*
iv. c. 10. &c.

Lupus? *Ovid. Halieut.* 112.

Le Bar, le Soup. *Belon.* 113.

Lupus. *Rondel.* 268. *Gesner pisc.*
506.

A Basse. *Wil. Ichth.* 271. *Raii*
syn. pisc. 83.

Perca radiis pinnæ dorsalis se-
cundæ tredecim, ani quatu-
ordecim. Arted. synon. 69.

Perca Labrax. Lin. syst. 482.
Gronov. Zooph. No. 300.

THE basse is a strong, active, and voracious fish: *Ovid* calls them *rapidi lupi*, a name continued to them by after-writers.

That which we had an opportunity of examining was small; but they are said to grow to the weight of fifteen pounds.

Size.

The

The irides are silvery: the mouth large: the teeth are situated in the jaws, and are very small: in the roof of the mouth is a triangular rough space, and just at the gullet are two others of a roundish form.

The scales are of a middling size, are very thick set, and adhere closely.

The first dorsal fin has nine strong spiny rays, of which the first is the shortest, the middlemost the highest; the second dorsal fin consists of thirteen rays, the first spiny, the others soft.

The pectoral fins have fifteen soft rays; the ventral six rays, the first spiny: the anal fourteen rays, the three first spiny, the others soft: the tail is a little forked.

The body is formed somewhat like that of a salmon.

The color of the back is dusky, tinged with blue.

The belly white. In young fish the space above the side line is marked with small black spots.

It is esteemed a very delicate fish.

III. The R U F F E.

Cernua. Belon. 186.

Perca fluviatilis genus minus.

Gesner pisc. 701.

Aspredo Carii opusc. 107.

Ein stuer, stuerbarfs. *Schonevelde. 56.*

Cernua fluviatilis. Wil. Ictb. 334.

Ruffe. *Raii syn. pisc. 143.*

Perca dorso monopterygio, capite cavernoso. Arted. syn. 68.

Perca cernua. P. pinnis dorsa-

libus unitis radiis 27. spinis

15. cauda bifida. Lin. syst.

487. Gronov. Zooph. No.

Giers, Snorgers. *Faun. suec. No. 119.*

Schroll, Pfaffenlaus. *Schaeff.*

pisc. 37. tab. ii. Wulff Boruss.

No. 35.

THIS fish is found in several of the *English* streams: it is gregarious, assembling in large shoals, and keeping in the deepest part of the water.

It is of a much more slender form than the perch, and seldom exceeds six inches in length.

The teeth are very small, and disposed in rows.

It has only one dorsal fin extending along the greatest part of the back: the first rays like those of the perch are strong, sharp, and spiny; the others soft.

The pectoral fins consist of fifteen rays; the ventral of six; the anal of eight; the two first strong and spiny: the tail a little bifurcated.

The body is covered with rough compact scales.

The back and sides are of a dirty green, the last inclining to yellow, but both spotted with black.

The dorsal fin is spotted with black: the tail marked with transverse bars.

IV. The BLACK RUFFE.

The Black Fish. Mr. *Jago*. *Borlase Cornwall*. 271, tab. xxv. fig. 8.

MR. *Jago* has left so brief a description of this fish, that we find difficulty in giving it a proper class: it agrees with the *Ruffe* in the form of the body, and the smallness of the teeth, in having a single extensive fin on the back, a forked tail, and being of that section of bony fish, termed *Thoracic*: these appear by the figure, the teeth excepted. The other characters must be borrowed from the description.

“ It is smooth, with very small thin scales, fifteen
 “ inches long, three quarters of an inch broad;
 “ head and nose like a peal or trout; little mouth;
 “ very small teeth, beginning from the nose four
 “ inches and three quarters, near six inches long;
 “ a forked tail; a large double nostril. Two taken
 “ at *Loo*, May 26, 1721, in the *Sean*, near the
 “ shore, in sandy ground with small ore weed.”

Genus

Genus XXIX. Three branchiostegous rays.
The belly covered with bony plates.
One dorsal fin, with several sharp spines between it and the head.
STICKLEBACK.

I. The THREE SPINED S. BACK.

La Grande Espinoche, un Epinard, une Artiere. <i>Belon.</i> 328.	<i>Gasterosteus aculeis</i> in dorso tribus. <i>Arted. synon.</i> 80.
<i>Pisciculi aculeati</i> prius genus. <i>Rondel. fluviat.</i> 206. <i>Gesner pisc.</i> 8.	<i>Gasterosteus aculeatus.</i> <i>Lin. syst.</i> 489. <i>Gronov. Zooph.</i> No. 406.
Stickleblack, Banstickle, or Sharpling. <i>Wil. Ictb.</i> 341. <i>Raii syn. pisc.</i> 145.	<i>Spigg, Horn-fisk. Faun. suec.</i> No. 336.
	<i>Stichling, Stachel-fisch. Wulff. Boruss.</i> No. 37.

THESE are common in many of our rivers, but no where in greater quantities than in the *Fens* of *Lincolnshire*, and some of the rivers that creep out of them. At *Spalding* there are, once in seven or eight years, amazing shoals that appear in the *Welland*, and come up the river in form of a vast column. They are supposed to be the multitudes that have been washed out of the fens by the floods of several years, and collected in some deep hole, till overcharged with numbers, they are periodically obliged to attempt a change of place. The quantity is so great, that they are used to manure the land, and trials have been made to get oil from them.

them. A notion may be had of this vast shoal, by saying that a man employed by the farmer to take them, has got for a considerable time four shillings a day by selling them at a halfpenny per bushel.

Descr.

This species seldom reaches the length of two inches: the eyes are large: the belly prominent: the body near the tail square: the sides are covered with large bony plates, placed transversely.

On the back are three sharp spines, that can be raised or depressed at pleasure: the dorsal fin is placed near the tail: the pectoral fins are broad: the ventral fins consist each of one spine, or rather plate, of unequal lengths, one being large, the other small; between both is a flat bony plate, reaching almost to the vent: beneath the vent is a short spine, and then succeeds the anal fin.

The tail consists of twelve rays, and is even at the end.

The color of the back and sides is an olive green; the belly white; but in some the lower jaws and belly are of a bright crimson;

II. The

II. The TEN SPINED S. BACK.

- | | |
|---------------------------------------|---|
| La petite Espinoche. <i>Belon.</i> | <i>Gasterosteus aculeis</i> in dorso |
| 328. | decem. <i>Arted. synonym.</i> 80. |
| Pisciculi aculeati alterum ge- | <i>Gasterosteus pungitius.</i> <i>Lin.</i> |
| nus. <i>Rondel. fluviat.</i> 206. | <i>syst.</i> 491. <i>Gronov. Zooph. No.</i> |
| <i>Gesner pisc.</i> 8. | 405. |
| Lesser Stickleback. <i>Wil. Ictb.</i> | <i>Benunge, Gaddsur, Gorquad.</i> |
| 342. <i>Raii syn. pisc.</i> 145. | <i>Faun. suec. No.</i> 337. |

THIS species is much smaller than the former, and of a more slender make.

The back is armed with ten short sharp spines, which do not incline the same way, but cross each other.

The sides are smooth, not plated like those of the preceding: in other particulars it resembles the former.

The color of the back is olive: the belly silvery.

III. The FIFTEEN SPINED S. BACK.

Aculeatus, five Pungitius marinus longus, Stein-bicker, Erskruper. *Schonevelde*. 10. tab. iv. *Sib. Scat.* iii. 24. tab. 19.

Aculeatus marinus major. *Wil. Ictb.* 340. *App.* 23. *Raii syn. pisc.* 145.

Gasterosteus aculeis in dorso quindecim. *Arted. synon.* 81.

Gasterosteus spinachia. *Lin. syst.* 492. *Gronov. Zooph.* No. 407. *Faun. suec.* No. 338.

THIS species inhabits the sea, and is never found in fresh water.

Its length is above six inches: the nose is long and slender: the mouth tubular: teeth small.

The fore part of the body is covered on each side with a row of bony plates, forming a ridge; the body afterwards grows very slender, and is quadrangular.

Between the head and the dorsal fin are fifteen small spines: the dorsal fin is placed opposite the anal fin: the ventral fins are wanting.

The tail is even at the end.

The color of the upper part is a deep brown: the belly white.

Genus XXX. Seven branchiostegous rays.
Several small fins between the dorsal
fin and the tail. MACKREL.

I. The M A C K R E L.

Σκόμβρος. <i>Arist. Hist. an. lib.</i>	Makerel. <i>Schonevelde</i> . 66.
vi. c. 17. ix. c. 2, <i>Athenæus.</i>	Mackrell, or Macarel. <i>Wil.</i>
<i>lib.</i> iii. 121. vii. 321. <i>Op-</i>	<i>Ictb.</i> 181. <i>Raii syn. pisc.</i> 58.
<i>pian Halieut.</i> I. 142.	<i>Scomber pinnulis quinque in</i>
<i>Scomber. Ovid. Halieut.</i> 94.	<i>extremo dorso, polypterygio,</i>
<i>Plinii lib.</i> ix. c. 15, xxxi. c. 8.	<i>aculeo brevi ad anum. Ar-</i>
Macarello, Scombro. <i>Salvian.</i>	<i>ted. synon.</i> 48.
241 *.	<i>Scomber Scomber. Lin. syst.</i>
Le Macreau. <i>Belon.</i> 197.	492. <i>Gronov. Zooph. No.</i> 304.
<i>Scomber. Rondel.</i> 233. <i>Gesner</i>	<i>Mackrill. Faun. suec. No.</i> 339.
<i>pisc.</i> 841. (pro 861.)	

THE mackrel is a summer fish of passage that visits our shores in vast shoals. It is less useful than other species of gregarious fish, being very tender, and unfit for carriage; not but that it may be preserved by pickling and salting, a method, we believe, practised only in *Cornwall* **, where it proves a great relief to the poor during winter.

It was a fish greatly esteemed by the *Romans*, because it furnished the pretious *Garum*, a sort of pickle that gave a high relish to their fauces, and was besides used medicinally. It was drawn from different

* This is the first opportunity we have had of looking into *Salvianus*, whose *Italian* synonyms we make use of.

** *Borlase Cornwall.* 269.

kinds of fish, but that made from the mackrel had the preference: the best was made at *Carthagena*, vast quantities of mackrel being taken near an adjacent isle, called from that circumstance, *Scombraria**, and the *Garum*, prepared by a certain company in that city, bore a high price, and was distinguished by the title of *Garum Sociorum***.

This fish is easily taken by a bait, but the best time is during a fresh gale of wind, which is thence called a *mackrel* gale.

Size,

It is not often that it exceeds two pounds in weight, yet we heard that there was one sold last summer in *London* that weighed five and a quarter.

Descr.

The nose is taper and sharp pointed: the eyes large: the jaws of an equal length: the teeth small, but numerous.

The form of this fish is very elegant.

The body is a little compressed on the sides: towards the tail it grows very slender, and a little angular.

The first dorsal fin is placed a little behind the pectoral fin, is triangular, and consists of nine or ten stiff rays; the second lies at a distance from the other, and has twelve soft rays; the pectoral twenty; the ventral six: at the base of the anal fin is a strong spine.

Between the last dorsal fin and the tail, are five small fins, and the same number between the anal fin and the tail.

* *Strabo lib. iii. 109.*

** *Plinii lib. xxxi. c. 8.*

The tail is broad and semilunar: The color of Color. the back and sides above the lateral line, is a fine green, varied with blue, marked with black lines, pointing downwards; beneath the line the sides and belly are of a silvery color.

It is a most beautiful fish when alive; for nothing can equal the brilliancy of its color, which death impairs, but does not wholly obliterate.

II. The T U N N Y.

Θύννος. *Arist. Hist. an. lib. ii. c. 13. &c. Athenæus. lib. vii. 301. Oppian Halieut. iii. 620.*

Thunnus. *Ovid. Halieut. 95. 95. Plinii. lib. ix. c. 15.*

Tonno. *Salvian. 123.*

Le Thon. *Belon. 99.*

Thunnus. *Rondel. 241. Gesner pisc. 957.*

Thunnus vel orcynus. *Schonevelde. 75.*

Tunny fish, or Spanish Mackrell. *Wil. Ictb. 176. Raii syn. pisc. 57.*

Scomber pinnulis octo vel novem in extremo dorso, ex sulco ad pinna ventrales.

Arted. synon. 49.

ScomberThunnus. Sc. pinnulis utrinque octo. *Lin. syst. 493.*

Gronov. Zooph. No. 305.

THE tunny was a fish well known to the antients, it made a considerable branch of commerce; the time of its arrival into the *Mediterranean* from the ocean was observed, and stations for taking them established in places it most frequented; the eminencies above the fishery were styled Θύννοσκοπεῖα*, and the watchmen that gave notice to those below of the motions of the fish, Θύννοσκοποι**. From one of the for-

* *Strabo. lib. v. 156.*

** *Oppian Halieut. iii. 638.* This person answers to what the *Cornish* call a *Huer*, who watches the arrival of the pilchards.

mer the lover in *Theocritus* threatened to take a desperate leap, on account of his mistress's cruelty.

ὅκ επακχεῖς ?

Τάν βαίταν ἀποδύς εἰς κυματα τηνα ἀλευμαι
Ὡπερ τῷς ΘΥΝΝΩΣ σκοπιάζεται Ὀλπις ὁ γριπεύς.

Do you not hear ? then, rue your Goat-herd's fate,
For, from the rock where *Olpis* doth descry
The numerous *Thunny*, I will plunge and die.

The very same station, in all probability, is at this time made use of, as there are very considerable thunny fisheries on the coast of *Sicily*, as well as several other parts of the *Mediterranean**, where they are cured, and make a great article of provision in the adjacent kingdoms. They are caught in nets, and amazing quantities are taken, for they come in vast shoals, keeping along the shores.

Size.

They grow to a large size, sometimes being found of above a hundred weight.

They are not common in our seas, but are sometimes taken off the west of *England*.

Descr.

Its form is less elegant than that of the mackrel, being rather thicker in the middle : the jaws are of an equal length ; the mouth black within : besides the teeth of the jaws, are others in the roof of the mouth.

The first dorsal fin is placed not remote from the head, and consists of fourteen rays, and is lodged in a small channel ; the second is almost contiguous to the other, and has the same number of rays.

* Many of them are the same that were used by the antients, as we learn from *Oppian* and others.

The pectoral fin consists of thirty-four rays; the ventral fins are small, and have six rays; the anal, thirteen: between the last dorsal fin and the tail, are from eight to ten small ones, and between the anal fin and the tail eight.

The body near the tail is slender, and almost quadrangular; the tail is in the form of a crescent.

The color of the upper part of the body is dusky, Color. varied with blue and green: the sides and the belly silvery.

III. The S C A D.

Sauro. *Salvian.* 79.

Un Sou, Macreau bastard.
Belon. 186.

Trachurus. *Rondel.* 233.

Lacertus *Bellonii.* *Gesner pisc.*
467.

Museken, Stocker. *Schono-velde.*
75.

Scad, Horfe-mackrell. *Wil.*

Ictb. 290. *Raii syn. pisc.* 92.

Scomber linea laterali aculeata,
pinna ani officulorum 30.

Arted. synon. 50.

Scomber Trachurus. Sc. pinnis
unitis, spina dorsali recum-
bente, linea laterali loricata.

Lin. syst. 494. *Gronov. Zooph.*
No. 308.

THAT which we examined was sixteen inches long: the nose sharp; the eyes very large; the irides silvery: the lower jaw a little longer than the upper: the edges of the jaws were rough, but without teeth.

On the upper part of the covers of the gills was a large black spot.

The scales were large and very thin: the lower half of the body quadrangular, and marked each
side

side with a row of thick strong scales, prominent in the middle, extending to the tail.

The first dorsal fin consisted of eight strong spines: the second lay just behind it, and consisted of thirty-four soft rays, and reached almost to the tail: the pectoral fins narrow and long, and composed of twenty rays: the ventral of six branched rays.

The vent was in the middle of the belly; the anal fin extended from it to the tail, which was greatly forked.

The head and upper part of the body varied with green and blue: the belly silvery.

This fish was taken in the month of *October*, was very firm and well tasted, having the flavor of mackrel.

Genus XXXI. Head compressed, steep, and covered with scales.
Two branchiostegous rays.
Body covered with large scales, easily dropping off.

SURMULLET.

I. The RED SURMULLET.

- | | |
|--|--|
| Τρίγλη? <i>Arist. Hist. an. lib.</i> | Petermanneken, Goldeken. |
| ii. <i>Oppian Halieut. I. 590.</i> | <i>Schonevelde. 47.</i> |
| Τρίγλη Σώφρων. <i>Athenæus. lib.</i> | <i>Mullus Bellonii. Wil. Ictb. 285.</i> |
| vii. 325. | <i>Raii syn. pisc. 90.</i> |
| <i>Mullus. Ovid. Halieut. 123.</i> | <i>Trigla capite glabro, cirris geminis in maxilla inferiore.</i> |
| <i>Plinii lib. ix. c. 17.</i> | <i>Arted. synon. 71.</i> |
| <i>Triglia. Salvian. 235.</i> | <i>Mullus cirris geminis, corpore rubro. Lin. syst. 495. Gronov. Zooph. No. 286.</i> |
| <i>Le Rouget barbé, Surmurlet. Belon. 170.</i> | |
| <i>Mullus barbatus. Rondel. 290.</i> | |
| <i>Gesner pisc. 565.</i> | |

THIS fish was highly esteemed by the Romans, and bore an exceeding high price. The capricious epicures of *Horace's** days, valued it in proportion to its size, not that the larger were more delicious, but that they were more difficult to be got. The price that was given for one in the time of *Juvenal*, and *Pliny*, is a striking evidence of the luxury and extravagance of the age:

*Mullum sex millibus emit
Æquantem sane paribus sestertia libris**.*

The lavish slave
Six thousand pieces for a Mullet gave,
A sesterce for each pound.

DRYDEN.

* *Sat. lib. ii. s. ii. 33.* ** *Juvenal. Sat. iv. 481. 8 s. 9 d.*

But

But *Asinius Celer**, a man of consular dignity, gave a still more unconscionable sum, for he did not scruple bestowing eight thousand nummi, or sixty-four pounds eleven shillings and eight-pence, for a fish of so small a size as the mullet; for according to *Horace*, a *Mullus trilibris*, or one of three pounds, was a great rarity; so that *Juvenal*'s spark must have had a great bargain in comparison of what *Celer* had.

But *Seneca* says that it was not worth a farthing, except it died in the very hand of your guest: that such was the luxury of the times, that there were stews even in the eating rooms, so that the fish could at once be brought from under the table, and placed on it: that they put the mullets in transparent vases, that they might be entertained with the various changes of its rich color while it lay expiring**. *Apicius*†, a wonderful genius for luxurious inventions, first hit upon the method of suffocating them in the exquisite *Carthaginian*‡ pickle, and afterwards procured a rich sauce from their livers. This is the same gentleman whom *Pliny*, in another place, honors with the title of *Nepotum omnium altissimus gurgis*§, an expression too forcible to be rendered in our language.

* *Plin. lib. ix, c. 17.*

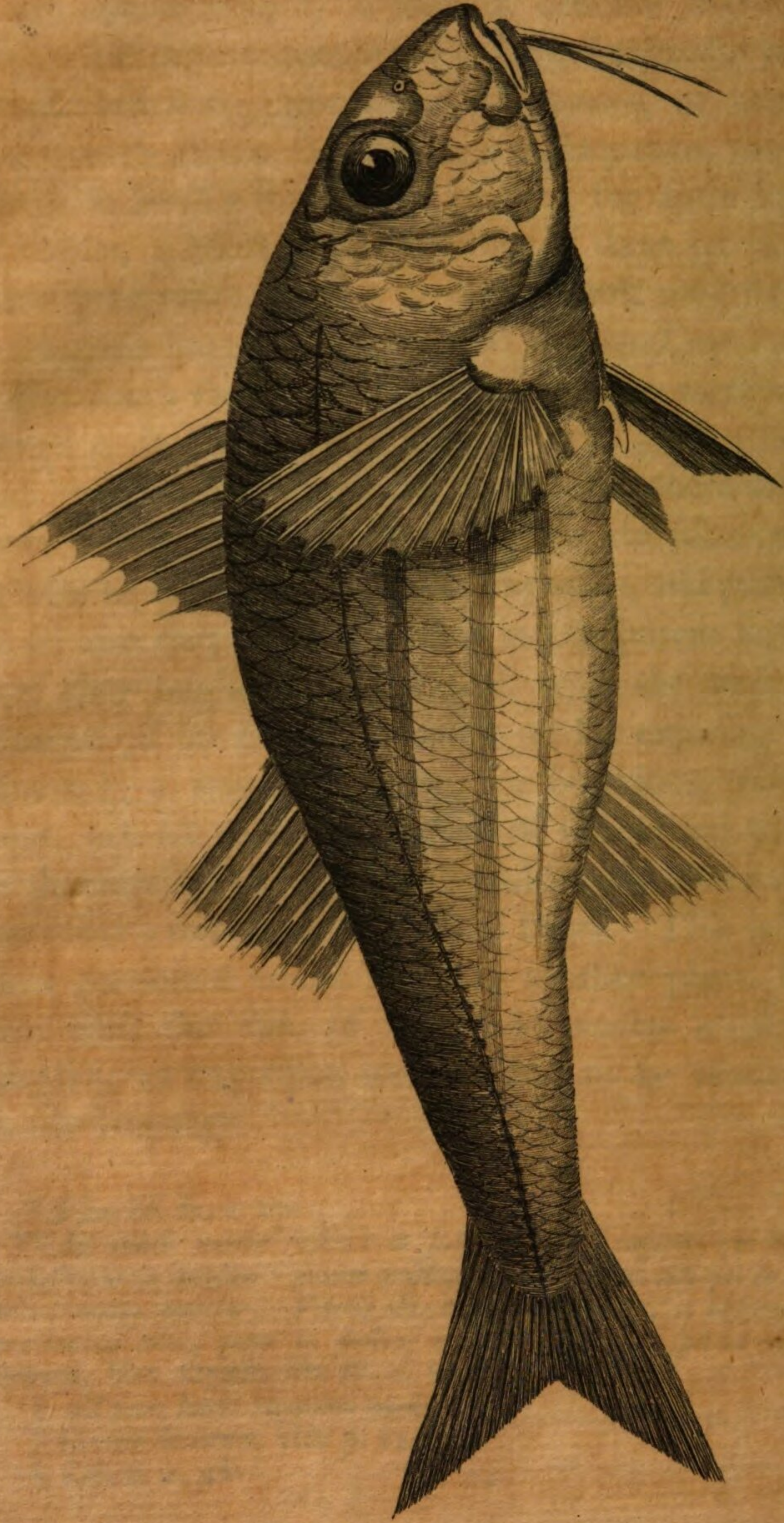
** *In cubili natant pisces: et sub ipsa mensa capitur, qui statim transferitur in mensam: parum videtur recens mullus nisi qui in convivæ manu moritur. Vitreis ollis inclusi offeruntur, et observatur morientium color, quem in multas mutationes luctante spiritu vertit. Seneca. Nat. Quæst. lib. iii. c. 16.*

† *Ad omne luxus ingenium mirus.*

‡ *Garum Sociorum, vide p. 222.*

§ *Lib. x. c. 48.*

SURMULLET.



Mazell del & Sculp

We have heard of this species being taken on the coast of *Scotland*, but had no opportunity of examining it; and whether it is found in the west of *England* with the other species, or variety, we are not at this time informed. *Salvianus* makes it a distinct species, and says, that it is of a purple color, striped with golden lines, and that it did not commonly exceed a palm in length: no wonder then that such a prodigy as one of six pounds should so captivate the fancy of the *Roman* epicure.

Mr. *Ray* establishes some other distinctions, such as the first dorsal fin having nine rays, and the color of that fin, the tail, and the pectoral fins, being of a very pale purple.

On these authorities we form different species of these fish, having only examined what *Salvianus* and Mr. *Ray* call the *Mullus major*, which we describe under the title of

II. The STRIPED SURMULLET.

Mullus major. <i>Salvian.</i> 236.	utrinque quatuor luteis, longitudinalibus, parallelis. <i>Arted. synon.</i> 72.
Mullus major noster et <i>Salviani.</i> 95. <i>Cornubiensibus.</i>	
A Surmullet. <i>Wil. Ictb.</i> 285. <i>Raii syn. pisc.</i> 91.	Mullus cirris geminis lineis luteis longitudinalibus. <i>Lin. Syst.</i> 496.
Trigla capite glabro, lineis	

THIS species was communicated to us by Mr. *Pitfield* of *Exeter*: its weight was two pounds and an half; its length was fourteen inches; the thickest circumference eleven. It appears on the coast

coast of *Devonshire* in *May*, and retires about *November*.

The head steep : the nose blunt : the body thick : the mouth small : the lower jaw furnished with very small teeth : in the roof of the mouth is a rough hard space : at the entrance of the gullet above is a single bone, and beneath are a pair, each with echinated surfaces, that help to comminute the food before it passes down.

From the chin hung two beards, two inches and an half long.

The eyes large : the irides purple : the head and covers of the gills very scaly.

The first dorsal fin was lodged in a deep furrow, and consisted of six strong, but flexible rays ; the second of eight ; the pectoral fins of sixteen ; the ventral of six branched rays ; the anal of seven : the tail is much forked.

The body very thick, and covered with large scales ; beneath them the color was a most beautiful rosy red* ; the changes of which, under the thin scales, gave that entertainment to the *Roman* epicures as above mentioned : the scales on the back and sides were of a dirty orange ; those on the nose a bright yellow : the tail a reddish yellow.

The sides were marked lengthways with two lines of a light yellow color : these with the red color of the dorsal fins, and the number of their rays, Mr. *Ray* makes the character of the *Cornish Surmullet* : these are notes so liable to vary by accident, that till

* This color is most vivid during summer.

we receive further informations from the inhabitants of our *Western* coasts, where these fish are found, we shall remain doubtful whether we have done right in separating this from the former, especially as *Doctor Gronovius* has pronounced them to be only varieties.

Genus XXXII. Nose sloping.

Head covered with strong bony plates.

Seven branchiostegous rays.

Three slender appendages at the base of the pectoral fins.

GURNARD.

I. The GREY GURNARD.

Gurnatus seu Gurnardus griseus, the Grey Gurnard. *Wil.*

Ichth. 279. *Raii syn. pisc.* 88.

Trigla vario rostro diacantho, aculeis geminis ad utrum-

que oculum. *Arted. synon.* 74.

Trigla Gurnardus, Tr. digitis ternis dorso maculis nigris

tubrisque. *Lin. syst.* 497.

Gronov. Zooph. No. 283.

THE nose pretty long, and sloping: the end bifurcated, and each side armed with three short spines.

The eyes very large; above each were two short spines: the forehead and covers of the gills silvery; the last finely radiated.

The teeth small, placed in the lower and upper jaws, in the roof of the mouth, and base of the tongue.

Q

Nostrils

Nostrils minute, and placed on the sides of the nose.

On the extremity of the gill covers was a strong, sharp, and long spine : beneath that, just above the pectoral fins, another.

The first dorsal fin consisted of eight spiny rays ; the sides of the three first tuberculated.

The second dorsal fin of nineteen soft rays : both fins lodged in a groove, rough on each side, but not serrated.

The pectoral fins transparent, and supported by ten rays, bifurcated from their middle : the three beards at their base as usual.

The ventral fins had six rays, the first spiny, and the shortest of all.

The anal fin nineteen, each soft.

The tail bifurcated.

The lateral line very prominent, and strongly serrated.

The back, tail, and a small space beneath the side line, were of a deep grey, covered with small scales, and in parts spotted with white ; the belly silvery. We could not perceive any yellow spots, as Mr. Ray mentions, but possibly they vary.

II. The RED GURNARD.

Κόκκυξ? *Arist. Hist. an. lib.*
iv. c. 9. *Oppian Halieut. l. 97.*

Κόκκυξ ἑρυθρός. *Athenæus lib.*
vii. 309.

Pesce capone, Cocco, Organo.
Salvian. 191.

Le Rouget. *Belon. 199.*

Cuculus. *Rondel. 287. Gesner*
pisc. 305.

Smiedecknecht, Kurre-fische.
Schonevelde. 32.

Red Gurnard, or Rotchet.
Wil. Ictb. 281. Raii syn. pisc.
89.

Trigla tota rubens, rostro pa-
rum bicorni, operculis bran-
chiarum striatis. Arted. synon.
74.

Trigla cuculus. Tr. digitis
ternis, linea laterali mutica.
Lin. syst. 497.

THIS species agrees in its general appearance with the tub fish; but in these particulars differs.

The covers of the gills are radiated: the spines are less and shorter in those of the red gurnard.

The fins and body are of a fuller red: the scales are larger: the head less: the pectoral fins are shorter, and edged with purple, not with blue.

III. The P I P E R.

Auga? *Arist. Hist. an. lib. iv. c. 9.* *Trigla rostro longo diacantho, naribus tubulosis. Arted. syn. 74.*
Lyra. Rondel. 298. Gesner pisc. 516. *Trigla Lyra. Tr. digitis ternis, naribus tubulosis. Lin. syst. 496.*
The Piper. Wil. Ictb. 282. Raii syn. pisc. 89.

THIS species is frequently taken on the western coasts of this kingdom, and esteemed an excellent fish.

The weight of one which was communicated to us by Mr. *Pitfield**, was three pounds and an half; the thickest circumference thirteen inches, the least, which was next the tail, only three: the length near two feet.

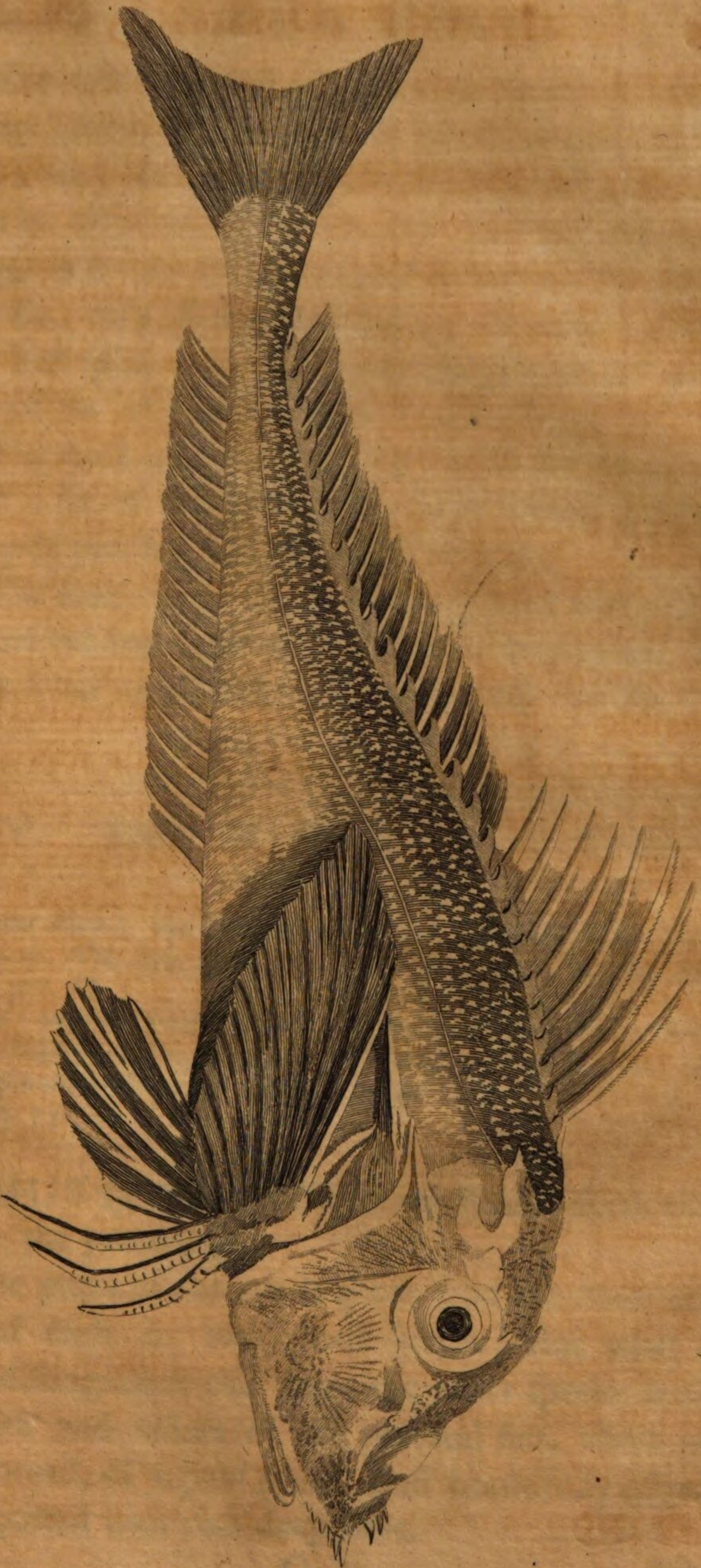
The head was very large, and that part of the body next to it very thick: the nose divided into two broad plates, each terminated with three spines: on the inner corner of each eye is a strong spine: the bony plates of the head terminate on each side with another.

The covers of the gills are armed with one very sharp and strong spine, and are prettily striated: immediately over the pectoral fin is another spine very large and sharp pointed.

The nostrils very minute: the eyes large.

The lower jaw much shorter than the upper: the teeth in both very minute.

* We have been informed that this fish is found at all times of the year on the western coasts, and is taken in nets.



g Hauttier punk'

J Magell

The first dorsal fin consisted of nine very strong sharp spines, the second of which is the longest; the second fin begins just behind the first, and consists of eighteen soft rays: the pectoral fins were long, and had twelve branched rays; the ventral fins six, very strong and thick: the anal eighteen, the first spiny: the tail small, in proportion to the size of the fish, and forked.

The back on each side the dorsal fin was armed with a set of strong and very large spines, pointing towards the tail like the teeth of a saw.

The scales were small, but very hard and rough: the lateral line bent a little at its beginning, that went straight to the tail, and was almost smooth.

IV. The TUB FISH.

Hirundo Aldrov. the Tub-fish,
Cornub. Wil. Ictb. 280. *Raii*
syn. pisc. 88.

Trigla capite aculeato, ap-
pendicibus utrinque tribus
ad pinna pectorales. Arted.
synon. 73.

Trigla hirundo. Tr. digitis
ternis, linea laterali acu-
leata. Lin. syst. 497.

Knorrhane, Knoding, Knot,
Smed. *Faun. suec.* No.
340.

THIS species is of a more slender form than the preceding.

The pupil of the eye is green: on the inner corner of each are two small spines. But what at once distinguishes this from the other species is the breadth and colors of the pectoral fins, which are very broad, of a pale green, most beautifully edged, and spotted with rich deep blue.

236 STREAKED GURNARD. Class IV.

The dorsal fins are lodged between two rows of spines, of a ferrated form: the back is of a greenish cast: the side line is rough: the sides are tinged with red; the belly white.

These fish are found on the coast of *Cornwall*. We have also taken them off *Anglesea*.

V. The STREAKED GURNARD.

Cuculus lineatus, the Streaked Gurnard. *Raii syn. pisc.* 165. fig. 11.

THIS is one of the *Cornish* fish communicated to Mr. *Petiver* by Mr. *Jago*. He says the head is large, and distinguished with stellated marks; the eyes great; the covering of the gills thorny; the mouth small, and without teeth. By the figure the nose seems not to be bifurcated. The pectoral fins large, and spotted, beneath them three filaments: the color of the body red: the belly white, marked with many streaks, pointing downwards, from the back.

Mr. *Jago* imagines it to be the *Mullis imberbis* of *Rondeletius*. *Wil. Ictb.* 278.

Sect. IV. A B D O M I N A L.

Genus XXXIII. Eyes in the upper part of the head.
 Aperture to the gills closed below.
 Several beards on the end of the
 upper jaw.
 Body of almost an equal thickness.
 One dorsal fin. **LOCHE.**

I. The L O C H E.

- | | |
|---|---|
| La Loche franche. <i>Belon.</i> 321. | corpore subtereti. <i>Arted. synon.</i> 2. |
| Cobitis barbatula. <i>Rondel. fluviat.</i> 204. | Cobitis Barbatula. C. cirris sex capite inermi compresso. <i>Lin. syst.</i> 499. <i>Gronov. Zooph.</i> No. 202. |
| Cobitis fluviatilis barbatula. <i>Gesner pisc.</i> 404. | Gronling. <i>Faun. suec.</i> No. 341. |
| Smerling, Smerle. <i>Schonevelde.</i> 31. | Grundel. <i>Kram.</i> 396. <i>Wulff. Boruss.</i> No. 40. |
| Loche, or Groundling. <i>Wil. Ichth.</i> 265. <i>Raii syn. pisc.</i> 124. | |
| Cobitis tota glabra maculosa, | |

THE loche is found in several of our small rivers, keeping at the bottom on the gravel, and is on that account, in some places, called the *Groundling*: it is frequent on the stream near *Amesbury*, in *Wiltshire*, where the sportsmen, thro' frolick, swallow it down alive in a glass of white wine.

The largest we ever heard of was four inches and three quarters in length, but they seldom arrive to that size. Descri.

The mouth is small, placed beneath, and has no teeth: on the upper mandible are six small beards, one at each corner of the mouth, and four at the end of the nose.

The dorsal fin consists of eight rays; the pectoral of eleven; the ventral of seven; the anal of six: the tail is broad, and has sixteen or seventeen rays.

Color.

The body is smooth and slippery, and almost of the same thickness: the color of the head, back, and sides, is in some white, in others of a dirty yellow, very elegantly marked with large spots, consisting of numberless minute black specks: the pectoral, dorsal, and caudal fins are also spotted: the belly and ventral fins of a pure white: the tail broad, and a little rounded.

Genus

Genus XXXIV. Branchiostegous rays unequal in number.

Two dorsal fins ; the second thick, and without rays. SALMON.

*

With teeth.

I. The S A L M O N.

Salmo Plinii lib. ix. c. 18. Ausonius. Mosel. 97.

Salmon. Salvian. 100.

Le Saulmon. Belon. 271.

Salmo. Rondel. fluviat. 167.

Gesner pisc. 824. Schonevelde. 64.

Salmon. Wil. Ictb. 189. Raii syn. pisc. 63.

Salmo rostro ultra inferiorem maxillam sæpe prominente.

Arted. synon. 22.

Salmo Salar. Lin. syst. 509.

Gronov. Zooph. No. 369.

Lax. Faun. suec. No. 122.

Lachs. Wulff. Boruss. No. 42.

THE salmon is a northern fish, being unknown in the *Mediterranean* sea, and other warm climates : it is found in *France* in some of the rivers that empty themselves into the ocean*, and north as far as *Greenland* ; whether it reaches *America* we are not at this time assured : *Charlevoix*, *Lauson*, and *Catesby* do not mention it ; nor have we any authority for its being found there, except that of the romantic *Labontan*. Salmons are taken in the rivers of *Kamtschatka***, but whether they are of the same species with the *European* kind is not very certain.

* *Rondel. fluviat. 167.*

** *Hist. Kamtsch. 143.*

They

They are in several countries a great article of commerce, being cured different ways, by salting, pickling, and drying: there are stationary fisheries in *Iceland*, *Norway**, and the *Baltic*, but we believe no where greater than those at *Colraine* in *Ireland*; and in *Great-Britain* at *Berwick*, and in some of the rivers of *Scotland*.

The salmon was known to the *Romans* but not to the *Greeks*: *Pliny* speaks of it as a fish found in the rivers of *Aquitaine*: *Ausonius* enumerates it among those of the *Mosel*.

*Nec te puniceo rutilantem viscere Salmo
Transierem, latæ cujus vaga verbera caudæ
Gurgite de medio summas referuntur in undas,
Occultus placido cum proditur æquore pulsus.
Tu loricato squamosus pectore, frontem
Lubricus, et dubiæ facturus fercula cænæ,
Tempora longarum fers incorrupta morarum,
Præsignis maculis capitis, cui prodiga nutat
Alvus, opimatoque fluens abdomine venter.*

Nor I thy scarlet belly will omit,
O Salmon, whose broad tail with whisking strokes
Bears thee up from the bottom of the stream
Quick to the surface; and the secret lash
Below, betrays thee in the placid deep.
Arm'd in thy flaky mail, thy glossy snout
Slippery escapes the fisher's fingers; else
Thou makest a feast for nicest judging palates:
And yet long uncorrupted thou remainest:
With spotted head remarked, and wavy spread,
Of paunch immense o'erflowing wide with fat.

ANONYMOUS.

Ascends
rivers.

The salmon is a fish that lives both in the salt and fresh waters, quitting the sea at certain seasons for

* There was about the year 1578 a pretty considerable salmon fishery at *Cola*, in *Russian Lapland*. *Hackluyt. voy. I. 416.*

the

the sake of depositing its spawn in security, in the gravelly beds of rivers remote from their mouths. There are scarce any difficulties but what they will overcome, in order to arrive at places fit for their purpose: they will ascend rivers hundreds of miles, force themselves against the most rapid streams, and spring with amazing agility over cataracts of several feet in height. Salmon are frequently taken in the *Rhine* as high up as *Basil*; they gain the sources of the *Lapland* rivers* in spite of their torrent-like currents, and surpass the perpendicular falls of *Leixlip*** , *Kennerth*†, and *Pont aberglastyn*‡; these last feats we have been witnesses to, and seen the efforts of scores of fish, some of which succeeded, others miscarried during the time of our stay.

Salmon
leaps.

It may here be proper to contradict the vulgar error of their taking their tail in their mouth when they attempt to leap; such as we saw, sprung up quite strait, and with a strong tremulous motion.

Other particulars relating to the natural history of this fish, we shall relate in our accounts of the fisheries, either from our own observations, or from such as have been communicated to us from different places: the fullest we have been favored with is from Mr. *Potts*, of *Berwick*, to whom the publick is indebted for the following very curious history of the salmon fishery on the *Tweed*.

Tweed
fishery.

* *Scheff. Lap.* 139.

** Near *Dublin*.

† On the *Tivy* in *South Wales*, which *Michael Drayton* celebrates in his *Polyolbion* on this account.

‡ Amidst *Snowdon* hills, a wild scene in the style of *Salvator Rosa*.

Spawn-
ing.

At the latter end of the year, or in the month of *November*, the salmon begin to press up the rivers as far as they can reach, in order to spawn; when that time approaches they search for a place fit for the purpose: the male and female unite in forming a proper receptacle for it in the sand or gravel, about the depth of eighteen inches; in this the female deposits her spawn, the male his milt, which they cover carefully, as it is said, with their tails, for after spawning they are observed to have no skin on that part.

The spawn lies buried till spring, if not disturbed by violent floods; but the salmon hasten to sea as soon as they are able, to purify and cleanse themselves, and to recover their strength; for after spawning they become very poor and lean, and then are called *Kipper*.

About the latter end of *March* the spawn begins to exclude the young, which gradually increase to the length of four or five inches, and are then termed *Smelts* or *Smouts*: about the beginning of *May* the river is full of them; it seems to be all alive; there is no having an idea of the numbers without seeing them; but a seasonable flood then hurries them all to the sea, scarce any or very few being left in the river.

About the middle of *June* the earliest of the fry begin to drop, as it were, into the river again from the sea, at that time about twelve, fourteen, or sixteen inches, and by a gradual progress, increase in number and size till about the end of *July*, which is at *Berwick* termed the height of *Gilse* time, the
name

name given to the fish at that age: the end of *July*, or beginning of *August* they lessen in number, but encrease in size, some being six, seven, eight, or nine pounds in weight; this appears to be a surprising quick growth, yet we have received from a gentleman at *Warrington*, an instance still more so: a kipper salmon weighing 7 lb. three quarters, taken on the 7th of *February*, being marked with a scissars on the back, fin, and tail, and turned into the river, was again taken the 17th of *March* following, and then was found to weigh 17 lb. and a half. Quick growth.

The capture in the *Tweed*, about the month of *July*, is prodigious; in a good fishery, often a boat load, and sometimes near two, are taken in a tide: some few years ago there were above seven hundred fish taken at one hawl, but from fifty to a hundred is very frequent: the coopers in *Berwick* then begin to salt both *Salmon* and *Gilfes* in pipes, and other large vessels, and afterwards barrel* them to send abroad, having then far more than the *London* markets can take off their hands. Capture.

Most of the salmon taken before *April*, or to the setting in of the warm weather, is sent fresh to *London* in baskets, unless now and then the vessel is disappointed by contrary winds, of sailing immediately; in that case the fish is brought ashore again to the coopers offices, and boiled, pickled, and kitted, and sent to the *London* markets by the same ship, and fresh salmon put in the baskets in lieu of the stale ones. At the beginning of the season, when a ship

* The salmon barrel holds above forty-two gallons, wine measure.

Price.

is on the point of failing, a fresh clean salmon will sell from a shilling to eighteen pence a pound, and most of the time that this part of the trade is carried on, the prices are from five to nine shillings per stone*, the value rising and falling according to the plenty of fish, or the prospect of a fair or foul wind. Some fish are sent in this manner to *London* the latter end of *September*, when the weather grows cool, but then the fish are full of large roes, grow very thin bellied, and are not esteemed either palatable or wholesome.

The price of fresh fish in the month of *July*, when they are most plentiful, has been known to be as low as 8*d.* per stone, but last year never less than 16*d.* and from that to 2*s.* 6*d.*

Season.

The season for fishing in the *Tweed* begins *November* the 30th, but the fishermen work very little till after *Christmas*; it ends on *Michaelmas-Day*; yet the corporation of *Berwick* (who are conservators of the river) indulge the fishermen with a fortnight past that time, on account of the change of the style.

There are on the river forty-one considerable fisheries extending upwards, about fourteen miles from the mouth (the others above being of no great value) which are rented for near 5400*l.* per annum. The expences attending the servants wages, nets, boats, &c. amount to 5000*l.* more, which together makes up the sum 10400*l.* Now in consequence

* A stone of salmon weighs 18 lb. 10 oz. $\frac{1}{2}$, or in other terms, four stones, or fifty-six pounds avoirdupoise, is only three stones, or forty-two pounds, fish weight at *Berwick*.

the produce must defray all, and no less than twenty times that sum of fish will effect it, so that 208000 salmon must be caught there one year with another.

There is a misfortune attending the river *Tweed*, which is worthy a parliamentary remedy; for there is no law for preserving the fish in it during the fence months, as there is in the case of many other *British* rivers. This being the boundary between the two kingdoms, part of it belongs to the city of *Berwick*, and the whole north side (beginning about two miles from the town) is entirely *Scotch* property. From some disagreement between the parties they will not unite for the preservation of the fish, so that in some fisheries on the north side they continue killing salmon the whole winter, when the death of one fish is the destruction of thousands.

The legislature began very early to pay attention to this important article: by the 13th *Edward* 1st. there is an act which prohibits the capture of the salmon from the Nativity of our Lady to *St. Martin's* Day, in the waters of the *Humber*, *Ouse*, *Trent*, *Done*, *Arre*, *Derwent*, *Wharfe*, *Nid*, *Yore*, *Swale*, and *Tees*; and other monarchs in after-times, provided in like manner for the security of the fish in other rivers.

Scotland possesses great numbers of fine fisheries on both sides of that kingdom. The salmon are cured in the same manner as at *Berwick*, and a great quantity is sent to *London* in the spring; but after that time the adventurers begin to barrel and export them to foreign countries: but we believe that commerce

Scotland.

commerce is far less lucrative than it was in former times, partly owing to the great encrease of the *Newfoundland* fishery, and partly to the general relaxation of the discipline of abstinence in the *Romish* church.

Ireland.

Ireland (particularly the north) abounds with this fish: the most considerable fishery is at *Cranna*, on the river *Ban*, about a mile and an half from *Cole-raine*. When I made the tour of that hospitable kingdom in 1754, it was rented by a neighboring gentleman for 620*l.* a year, who assured me that the tenant, his predecessor, gave 1600*l.* per ann. and was a much greater gainer by the bargain for the reasons before-mentioned, and on account of the number of poachers who destroy the fish in the fence months.

The mouth of this river faces the north, and is finely situated to receive the fish that roam along the coast, in search of an inlet into some fresh water, as they do all along that end of the kingdom which opposes itself to the northern ocean. We have seen near *Ballicastle*, nets placed in the sea at the foot of the promontories that jut into it, which the salmon strike into as they are wandering close to shore, and numbers are taken by that method.

In the *Ban* they fish with nets eighteen score yards long, and are continually drawing night and day the whole season, which we think lasts about four months, two sets of sixteen men each alternately relieving one another. The best drawing is when the tide is coming in: we were told that at a single draught there were once eight hundred and forty fish taken.

A few

A few miles higher up the river is a ware, where a considerable number of fish that escape the nets are taken. We were lately informed, that in the year 1760 about 320 tons were taken in the *Cranna* fishery.

The salmon are cured in this manner: they are first split, and rubbed with fine salt; and after lying in pickle in great tubs, or reservoirs, for six weeks, are packed up with layers of coarse brown *Spanish* salt in casks, six of which make a ton. These are exported to *Leghorn* and *Venice* at the price of twelve or thirteen pounds per ton, but formerly from sixteen to twenty-four pounds each.

The salmon is a fish so generally known, that a Descr. very brief description will serve. The largest we ever heard of weighed seventy-four pounds. The color of the back and sides are grey, sometimes spotted with black, sometimes plain: the covers of the gills are subject to the same variety: the belly silvery: the nose sharp pointed: the end of the under jaw in the males often turns up in form of a hook; sometimes this curvature is very considerable: it is said that they lose this hook when they return to the sea.

The teeth are lodged in the jaws and on the tongue, and are slender, but very sharp.

The tail is a little forked.

II. The G R E Y.

The Grey, i. e. cinereus seu	Salmo eriox. <i>Lin. syst.</i> 509.
Griseus. <i>Wil. Ictb.</i> 193. <i>Raii</i>	Gralax. <i>Faun. suec.</i> No. 346.
<i>syn. pisc.</i> 63.	Lachss-forellen mit Schwarz-
Salmo maculis cinereis, caudæ	grauen flecken oder punkt-
extremo æquali. <i>Arted. synon.</i>	chens. <i>Wulff. Boruss.</i> No. 43.
23.	

WE are uncertain whether this is not a meer variety of the salmon; but on the authority of Mr. Ray, we describe them separate. He says it is a very strong fish, that it does not ascend the fresh waters till *August*, when it rushes up with great violence, that it is rarely taken, and not much known.

We saw one last summer caught near *Gloddaeth*, in *Caernarvonshire*, which weighed twenty-two pounds: the body was much deeper than that of the salmon; the head larger: the irides were silvery: the back, first dorsal fin, the sides above the lateral line, were of a deep grey, spotted with numbers of dark purplish spots: the belly silvery: the tail quite even at the end. The fishermen called it a she salmon.

Mr. Ray describes it among the fish of the trout kind, communicated to him by Mr. Johnson, who made his observations in the north of *England*: but it is not peculiar to that part, for we have heard of its being taken in the river *Wye*, where it is known by the name of *Sewin*, or *Skewin*.

III. The

III. The BULL TROUT.

Trutta taurina, apud nos in
Northumbria a Bull-trout.
Charlton. ex. pisc. 36.

Trutta Salmonata, the Salmon
Trout, Bull-trout, or Scurf.
Raii syn. pisc. 63. *Wil. Ich.*
193. 198.

Salmo latus, maculis rubris ni-

grisque, cauda æquali. *Ar-*
ted. synon. 24.

Salmo trutta. *S. ocellis nigris*,
iridibus brunneis, *pinna pec-*
toralis punctis sex. *Lin. syst.*
509. *Gronov. Zooph. No.* 367.
Orlax, Borting. Faun. suec.
No. 347.

THIS species is in some places called the bull trout, from the thickness and shortness of its head. Its flesh is white, and less delicate than that of others of this genus.

It seldom exceeds twenty inches in length: the back is ash-colored: the head and sides are marked with large black spots, encircled with brown.

The first dorsal fin is spotted with black: the pectoral fin marked with oblong spots: the belly white.

The tail is even at the end.

IV. The T R O U T.

Salar. *Aufonius Mosel.* 28.Salar et varius, Trotta. *Salvian.* 96.La Truitte. *Belon.* 274.Trutta fluviatilis. *Rendel. fluviat.* 169. *Gesner pisc.* 1002.Foren, Forellen. *Schonevelde.* 77.A Trout. *Wil. Ictb.* 199. *Raii syn. pisc.* 65.S. maculis rubris, maxilla inferiore longiore. *Arted. synonym.* 23.Salmo Fario. *Lin. syst.* 509.Laxoring, Forell, Stenbit. *Faun. suec.* No. 348.

IT is matter of surprize that this common fish has escaped the notice of all the antients, except *Aufonius*: it is also singular, that so delicate a species should be neglected at a time when the folly of the table was at its height; and that the epicures should overlook a fish that is found in such quantities in the lakes of their neighborhood, when they ransacked the universe for dainties. The milts of *Muræna* were brought from one place; the livers of *Scari* from another*; and *Oysters* even from so remote a spot as our *Sandwich*** : but there was, and is a fashion in the article of good living. The *Romans* seem to have despised the trout, the piper, and the doree; and we believe Mr. *Quin* himself would have resigned the rich paps of a pregnant sow†, the heels of camels‡, and the tongues of *Flamingos*§, tho' dressed by *Heliogabalus's* cooks, for a good jowl of salmon with lobster sauce.

* *Suetonius, vita Vitellii.*
 † *Marzial. lib. xiii. epig. 44.*
 ‡ *Marzial. lib. xii. epig. 71.*

** *Juvenal Sat. iv. 141.*
 † *Lamprid. vit. Heliogab.*

† *Mar-*
 § *Mar-*

When *Ausonius* speaks of this fish, he makes no euloge on its goodness, but celebrates it only for its beauty.

Purpureisque SALAR stellatus Tergore guttis.

With purple spots the *Salar's* back is stained.

These marks point out the species he intended: what he meant by his *Fario* is not so easy to determine: whether any species of trout, of a size between the *salar* and the salmon; or whether the salmon itself, at a certain age, is not very evident.

*Teque inter geminos species, neutrumque et utrumque,
Qui nec dum SALMO, nec SALAR ambiguusque.
Amborum medio Fario intercepter sub ævo.*

Salmon or *salar*, I'll pronounce thee neither;
A doubtful kind, that may be none, or either,
Fario, when stopt in middle growth.

In fact the colors of the trout, and its spots, vary greatly in different waters, and in different seasons; yet each may be reduced to one species. In *Llyndivi*, a lake in *South Wales*, are trouts called *Cochy dail*, marked with red and black spots as big as sixpences; others unspotted, and of a reddish hue, that sometimes weigh near ten pounds, but are bad tasted.

In *Lough Neagh* in *Ireland*, are trouts called there *Buddaghs*, which I was told sometimes weighed thirty pounds, but it was not my fortune to see any during my stay in the neighbourhood of that vast water.

Trouts (probably of the same species) are also taken in *Hulgewater*, a lake in *Cumberland*, of a much superior size to those of *Lough Neagh*. These are supposed to be the same with the trout of the lake of *Geneva*, a fish I have eaten more than once, and think but a very indifferent one.

Crooked
trouts.

In the river *Eynion*, not far from *Machyntletb*, in *Merionethshire*, and in one of the *Snowdon* lakes, are found a variety of trout, which are naturally deformed, having a strange crookedness near the tail, resembling that of the perch before described. We dwell the less on these monstrous productions, as our friend the Hon. *Daines Barrington*, has already given an account of them in an ingenious dissertation on some of the *Cambrian* fish, published in the *Philosophical Transactions* of the year 1767.

Trouts are most voracious fish, and afford excellent diversion to the angler: the passion for the sport of angling is so strong in the neighborhood of *London*, that the liberty of fishing in some of the streams in the adjacent counties, is purchased at the rate of ten pounds per annum.

These fish shift their quarters to spawn, and, like salmon, make up towards the heads of rivers to deposit their roes. The under jaw of the trout is subject, at certain times, to the same curvature as that of the salmon.

Descr.

A trout taken in *Llynallet*, in *Denbighshire*, which is famous for an excellent kind, measured seventeen inches, its depth three and three quarters, its weight one pound ten ounces: the head thick, the nose rather sharp: the upper jaw a little longer than the lower;

lower; both jaws, as well as the head, were of a pale brown, blotched with black: the teeth sharp and strong, disposed in the jaws, roof of the mouth and tongue, as is the case with the whole genus, except the *Gwyniad*, which is toothless, and the *Grayling*, which has none on its tongue.

The back was dusky; the sides tinged with a purplish bloom, marked with deep purple spots, mixed with black, above and below the side line which was strait: the belly white.

The first dorsal fin was spotted; the spurious fin brown, tipped with red; the pectoral, ventral, and anal fins, of a pale brown; the edges of the anal fin white: the tail very little forked when extended.

V. The S A M L E T.

Le Tacon? *Belon.* 275.

Salmulus, Herefordiæ Samlet dictus. *Wil. Ictb.* 192.

Salmulus, the Samlet Herefordiensibus, Branlin et Fingerin

Eboracensibus. Raii syn. pisc. 63.

Salmoneta, a Branlin. Ray's Letters, 199.

THE samlet is the least of the trout kind, is frequent in the *Wye*, in the upper part of the *Severn*, and the rivers that run into it, in the north of *England*, and in *Wales*. It is by several imagined to be the fry of the salmon; but our reasons for dissenting from that opinion are these:

First, It is well known that the salmon fry never

continue in the fresh waters the whole year; but as numerous as they appear on their first escape from the spawn, all vanish on the first vernal flood that happens, which sweeps them into the sea, and leaves scarce one behind.

Secondly, The growth of the salmon fry is so quick and so considerable, as suddenly to exceed the bulk of the largest samlet: for example, the fry that have quitted the fresh water in the spring, not larger than gudgeons, return into it again a foot or more in length.

Thirdly, The salmon attain a considerable bulk before they begin to breed: the samlets, on the contrary, are found male and female*, (distinguished by the milt and roe) of their common size.

Fourthly, They are found in the fresh waters in all times of the year, and even at seasons when the salmon fry have gained a considerable size. It is well known, that near *Shrewsbury* (where they are called *Samsons*) they are found in such quantities in the month of *September*, that a skilful angler, in a coracle, will take with a fly from twelve to sixteen dozen in a day.

They spawn in *November* and *December*, at which time those of the *Severn* push up towards the head of that fair river, quitting the lesser brooks, and return into them again when they have done.

They have a general resemblance to the trout, therefore must be described comparatively.

* It has been vulgarly imagined, that there were no other than males of this species.

First, The head is proportionably narrower, and the mouth less than that of the trout.

Secondly, Their body is deeper.

Thirdly, They seldom exceed six or seven inches in length.

Fourthly, The pectoral fins have generally but one large black spot, tho' sometimes a single small one attends it; whereas the pectoral fins of the trout are more numerously marked.

Fifthly, The spurious or fat fin on the back is never tipped with red; nor is the edge of the anal fin white.

Sixthly, The spots on the body are fewer, and not so bright. It is also marked from the back to the sides with six or seven large bluish bars; but this is not a certain character, as the same is sometimes found in young trouts.

Seventhly, The tail of the samlet is much more forked than that of the trout.

VI. The C H A R R.

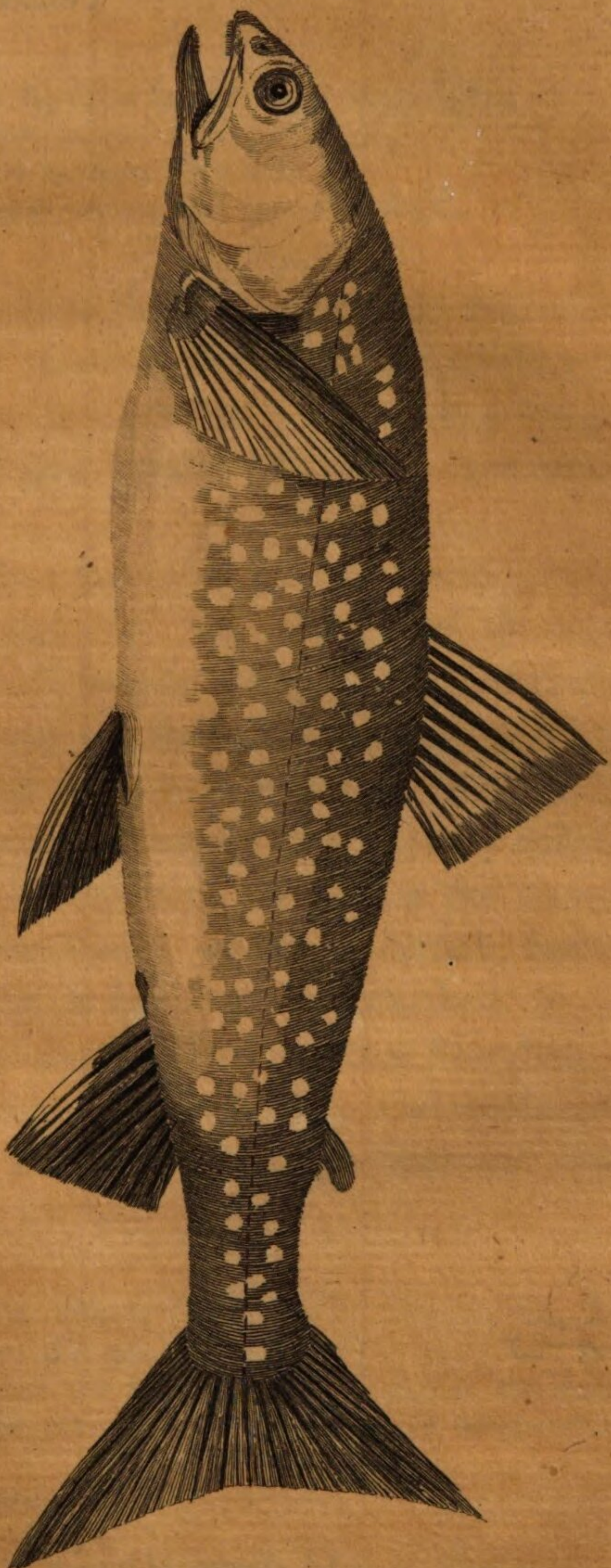
- L'Ombre, ou Humble. *Belon.* 281. tralibus rubris, maxilla inferiore longiore. *Arted. syn.* 25.
 Umbla feu Humble *Belonii.* *Gesner pisc.* 1005. Salmo Alpinus. *Lin. syst.* 510.
Gronov. Zooph. No. 372.
 Umbla minor. *Gesner pisc.* 1013. Roding, *Lapponibus* Raud.
 Torgoch *Wallis. Westmorlandis* *Faun. suec.* No. 124.
 Red Charre *Lacus Winander* Charr-fish. *Phil. Trans.* 1755.
mere. Wil. Ictb. 196. *Raii syn. pisc.* 65. 210.
 Salmo vix pedalis, pinnis ven-

THE charr is an inhabitant of the lakes of the north, and of those of the mountainous parts of *Europe*. It affects clear and pure waters, and is very rarely known to wander into running streams, except into such whose bottom is similar to the neighboring lake.

It is found in vast abundance in the cold lakes on the summits of the *Lapland Alps*, and is almost the only fish that is met with in any plenty in those regions; where it would be wonderful how they subsisted, had not Providence supplied them with innumerable *larvæ* of the *Gnat* kind*: these are food

* A pupil of *Linnaeus* remarks in the fourth volume of the *Amæn. Acad.* p. 156, that the same insects which are such a pest to the rein deer, afford sustenance to the fish of the vast lakes and rivers of *Lapland*. But at the same time that we wonder at *Linnaeus's* inattention to the food of the birds and fish of that country, which abound even to a noxious degree, we must, in justice to that gentleman, acknowledge an oversight of our own in the second volume of the *British Zoology*, p. 522, where we give the *Lapland* waters only one species of water plant; for on a more careful review of that elaborate performance, the

to



Willkerson del

Magell Sculp

to the fish, who in their turn are a support to the migratory *Laplanders*

Whilst when the solar beams salute their fight,
Bold and secure in half a year of light,
Uninterrupted voyages they take
To the remotest woods, and farthest lake*.

In such excursions those vacant people find a luxurious and ready repast in these fish, which they dress and eat without the addition** of sauces; for exercise and temperance render useless the inventions of epicurism.

There are but few lakes in our island that produce this fish, and even those not in any abundance. It is found in *Winander Mere* in *Westmorland*; in *Llyn Quellyn*, near the foot of *Snowdon*; and before the discovery of the copper-mines, in those of *Llyn-berris*, but the mineral streams have entirely destroyed the fish in the last lakes†. Whether the waters of *Ireland* afford the charr, we are uncertain, but imagine not, except it has been overlooked by their writers on the natural history of that kingdom. In *Scotland* it is found in *Loch Inch*, and other neighboring lakes, and is said to go into the *Spey* to spawn.

Flora Lapponica, we discover three other species, viz. *Scirpus*, No. 18, *Alopecurus*, No. 38, *Ranunculus*, No. 234; but those so thinly scattered over the *Lapland* lakes, as still to vindicate our assertion, as to the scarceness of plants in the waters of alpine countries.

* *Prior's Solomon. Book I.*

** *Arted. Sp. pisc. 52.*

† They are also found in certain lakes in *Merionethshire*.

The largest and most beautiful we ever received were taken in *Winander Mere*, and were communicated to us by the Rev. Mr. *Farrish*, of *Carlisle*, with an account of their natural history. He favored me with five specimens, two under the name of the *Cafe Charr*, male and female; another he called the *Gelt Charr*, i. e. a charr which had not spawned the preceding season, and on that account is reckoned to be in the greatest perfection. The two others were inscribed, the *Red Charr*, the *Silver or Gilt Charr*, the *Carpio Lacus BENACI*, *Raii syn. pisc.* 66, which last are in *Westmorland* distinguished by the epithet *red*, by reason of the flesh assuming a higher color than the other when dressed.

Varie-
ties.

On the closest examination, we could not discover any specific differences in these specimens, therefore must describe them as the same fish, subject only to a slight variation in their form, hereafter to be noted. But there is in another respect an essential difference, we mean in their œconomy, which is in all beings invariable; the particulars we shall deliver in the very words of our obliging informant.

Spawning
ing of
the cafe
charr.

The *Umbla minor*, or cafe charr, spawns about *Michaelmas*, and chiefly in the river *Bratby*, which uniting with another called the *Rowthay*, about a quarter of a mile above the lake, they both fall into it together. The *Bratby* has a black rocky bottom; the bottom of the *Rowthay* is a bright sand, and into this the charr are never observed to enter. Some of them however spawn in the lake, but always in such parts of it which are stony, and resemble the
channel

channel of the *Bratby*. They are supposed to be in the highest perfection about *May*, and continue so all the summer, yet are rarely caught after *April*. When they are spawning in the river they will take a bait, but at no other time, being commonly taken, as well as the other species, in what they call *breast nets*, which are in length about twenty-four fathoms, and about five, where broadest.

The season which the other species spawns in is from the beginning of *January* to the end of *March*. They are never known to ascend the rivers, but always in those parts of the lake which are springy, where the bottom is smooth and sandy, and the water warmest. The fishermen judge of this warmth, by observing that the water seldom freezes in the places where they spawn, except in intense frosts, and then the ice is thinner than in other parts of the lake. They are taken in greatest plenty from the end of *September* to the end of *November*: at other times they are hardly to be met with. This species is much more esteemed for the table than the other, and is very delicate when potted.

Gilt
charrs

We must observe, that this account of the spawning season of the *Westmorland* charrs, agrees very nearly with that of those of *Wales*, the last appearing about a month later, keep moving from side to side of the pool, and then retire into the deep water, where they are sometimes but rarely taken.

This remarkable circumstance of the different season of spawning in fish, apparently the same (for the red charr of *Winander*, is certainly not the

Carpio

Carpio Lacus BENACI *) puzzles us greatly, and makes us wish that the curious, who border on that lake, would pay farther attention to the natural history of these fish, and favor us with some further lights on the subject.

We shall now describe the varieties by the names ascribed to them in the north,

Red
charr.

The length of the red charr to the division in its tail, was twelve inches; its biggest circumference almost seven. The first dorsal fin five inches and three quarters from the tip of its nose, and consisted of twelve branched rays; the first of which was short, the fifth the longest: the fat fin was very small.

Each of the five fish had double nostrils, and small teeth in the jaws, roof of the mouth, and on the tongue.

The head, back, dorsal fin, and tail of each, was of a dusky blue; the sides rather paler, marked with numbers of bright red spots: the bellies of the *Red Charr* were of a full and rich red; those of the *Cafe Charr* rather paler; from this particular the *Welsh* call these fish *Torgoch*, or red belly.

The first rays of the anal and ventral fins of each, were of a pure white; the rest of each fin on the lower part of the body, tinged with red.

The lateral line strait, dividing the fish in two equal parts, or nearly so.

The jaws in the *Cafe Charr* are perfectly even; on the contrary, those of the *Red Charr* were unequal,

* A fish well described by *Salvianus*, p. 99, which bears no kind of resemblance to our fish, except the generical one.

the upper jaw being the broadest, and the teeth hung over the lower, as might be perceived on passing the finger over them.

The branchiostegous rays were, on different sides of the same fish, unequal in number, viz. 12,--11, 11,--10, 10--9, except in one, where they were 11,--11.

The *Gelt*, or *Barren Charr*, was rather more slender than the others, as being without spawn. The back of a glossy dusky blue: the sides silvery, mixed with blue, spotted with pale red: the sides of the belly were of a pale red, the bottom white.

Gelt
charr.

The tails of each bifurcated.

The charrs we have seen, brought from the *Snowdon* lakes, were rather smaller than those of *Westmorland*: their colors paler. The supposed males very much resemble the *Gelt Charr*; but that is not a certain distinction of sex, for the Rev. Mr. *Farington**, has told me that the fishermen do not make that distinction.

* Who favored the Royal Society with a paper on the *Welch charr*. *Vide Phil. Transf.* 1755.

VII. The GRAYLING.

Θυμαλλος. *Ælian. de an. lib.*
xiv. c. 22. Umbra *Ausonii*
Mosella. 90.

Thymalus, Thymus. *Salvian.*
81. *Belon.* 276.

Thymus, Umbra fluviatilis.
Rondel. fluv. 187, 172. *Ges-*
ner pisc. 132.

A Grayling, or Umber. *Wil.*

Ictb. 187. *Raii syn. pisc.* 62,
Coregonus maxilla superiore
longiore, pinna dorsi officu-
lorum viginti trium. *Arted.*
synon. 20.

Salmo Thymallus. *Lin. syst.*
512. *Gronov. Zooph.* No. 375.
Asch. Kram. 390.

THE grayling haunts clear and rapid streams, and particularly such that flow thro' mountainous countries. It is found in the rivers of *Derbyshire*; in some of those of the north; in the *Tame* near *Ludlow*; and in the *Lug*, and other streams near *Leominster*: it is also very common in *Lapland*; the inhabitants make use of the guts of this fish instead of rennet, to make the cheese which they get from the milk of the rein deer*.

It is a voracious fish, rises freely to the fly, and will very eagerly take a bait. It is a very swift swimmer, and disappears like the transient passage of a shadow, from whence we believe is derived the name of *Umbra*.

*Effugiensque oculos celeri levis UMBRA natatu**.*

The *Umbra* swift escapes the quickest eye.

Thymalus and *Thymus*, are names bestowed on it on account of the imaginary scent, compared by some

* *Flora Lap.* 109.

** *Æmæn. Acad.* iv. 159.

to that of thyme; but we never could perceive any particular smell.

It is a fish of an elegant form; less deep than that of a trout: the largest we ever heard of was taken near *Ludlow*, which was above half a yard long, and weighed four pounds six ounces, but this was a very rare instance. Deser.

The irides are silvery, tinged with yellow: the teeth very minute, seated in the jaws and the roof of the mouth, but none on the tongue: the head is dusky: the covers of the gills of a glossy green: the back and sides of a fine silvery grey, but when the fish is just taken, varied slightly with blue and gold: the side-line is strait.

The scales large, and the lower edges dusky, forming strait rows from head to tail.

The first dorsal fin has twenty-one rays; the three or four first are the shortest, the others almost of equal lengths; this fin is spotted, all the others are plain.

The tail is much forked.

VIII. The S M E L T.

Epelan de mer. *Belon.* 282.Eperlanus. *Rondel. fluviat.* 196.*Gesner pisc.* 362.Spirincus et Stincus. *Gesner*
Paralip. 29.A Spyrling a Sprote. *Turner*
*epist. ad. Gesn.*Stindt, et Stinckfisch. *Schone-*
velde. 70.A Smelt. *Wil Ictb.* 202. *Rai*
syu. pisc. 66.Osmerus radiis pinnae ani sep-
tendecim. *Arted. synon.* 21.Salmo eperlanus. S. capite di-
aphano, radiis pinnae ani
septendecim. *Lin. syst.* 511.*Gronov. Zooph. No.*Nors, Slom. *Faun suet.* No. 350.

THE smelt inhabits the seas of the northern parts of *Europe*, and we believe never is found as far south as the *Mediterranean*: the *Seine* is one of the *French* rivers which receive it, but whether it is found south of that, we have not at present authority to say. If we can depend on the observations of navigators, who generally have too much to think of to attend to the *minutiae* of natural history, these fish are taken in the straits of *Magellan**, and of a most surprising size, some measuring twenty inches in length, and eight in circumference.

They inhabit the seas that wash these islands the whole year, and never go very remote from shore, except when they ascend the rivers. It is remarked in certain rivers that they appear a long time before they spawn, being taken in great abundance in *November*, *December*, and *January*, in the *Thames* and *Dee*, but in others not till *February*, and in *March*

* *Narborough's Voy.* 123.

and *April* they spawn; after which* they all return to the salt water, and are not seen in the rivers till the next season. It has been observed, that they never come into the *Mersey* as long as there is any snow water in the river.

These fish vary greatly in size, but the largest we ever heard of was thirteen inches long, and weighed half a pound.

They have a very particular scent, from whence is derived one of their *English* names *Smelt*, i. e. smell it. That of *Sparling*, which is used in *Wales*, and the north of *England*, is taken from the *French* *Eperlan*. There is a wonderful disagreement in the opinion of people in respect to the scent of this fish; some assert it flavors of the violet; the *Germans*, for a very different reason, distinguish it by the elegant title of *Stinckfisch***.

It is a fish of a very beautiful form and color: the head is transparent, and the skin in general so thin, that with a good microscope the blood may be observed to circulate.

The irides are silvery: the pupil of a full black: the under jaw is the longest: in the front of the upper jaw are four large teeth; those in the sides of both are small; in the roof of the mouth are two

Descr.

* In the river *Conway*, near *Llanrwst*, and in the *Mersey* they never continue above three or four weeks.

** And not without reason, if we may depend on *Linnaeus*, who says there are in the *Baltic* two varieties, the one, which is called *Nors*, *foetidissimus*, *stercoris instar*, which in the early spring, when the peasants come to buy it, fills all the streets of *Upsal* with the smell. He adds, that at this season agues reign there. *Faun. Suec.* p. 125.

rows of teeth; on the tongue two others of large teeth.

The first dorsal fin has eleven rays; the pectoral fins the same number; the ventral eight; the anal fourteen.

The scales are small, and readily drop off: the tail consists of nineteen rays, and is forked.

The color of the back is whitish, with a cast of green, beneath which it is varied with blue, and then succeeds a beautiful gloss of a silvery hue.

*South-
ampton
smelt.*

Besides this species is another, which was communicated to us by the Hon. *Daines Barrington*, who describes it in these words:

The *Southampton* smelt agrees with the common kind in having two back fins, but both of them are radiated; the first with eight radii, the second with twelve; the belly fins have only five or six radii: the upper jaw is longer than the lower, and has a few teeth, whereas the lower has none: in color, transparency of the back and head, silver stripes on the sides, forked tail, &c. it agrees nearly with the former, but has nothing of the violet smell or taste. It swarms in that sea, and is the common bait for whiting, mackrell, flat-fish, &c. It is eaten fried, is tender and sweet, and without any small bones, but must be gutted before it is dressed. It grows to three or four inches in length, but is commonly much less.

IX. The GWINIAD.

Le Lavaret. *Belon.* 278.

Lavaretus; Piscis *Lemani* lacus

Bezola vulgo nuncupatus.

Alius Piscis proprius *Lemani*

lacus. *Rondel. fluviat.* 162,

163, 164. *Gesner pisc.* 29,

30, 31.

Albula nobilis, Snepel, Helte?

Schonevelde 12.

Vandesius et Gevandesius. *Sib.*

Scot. 26.

Guiniad *Wallis* piscis lacus *Ba-*

lensis, *Ferræ* (uc puto) idem.

Wil Ictb. 183. *Raii syn. pisc.*

61.

Lavaretus *Allobrogum*, Schelley

Cumberlandis. Wil. Ictb. 183.

Raii syn. pisc. 61.

Albula cærulea. *Scheuchzer it.*

Alp. ii. 481.

Coregonus maxilla superiore

longiore plana, pinna dorsi

officulorum 14. *Arted. synon.*

19.

Salmo Lavaretus. *Lin. syst.*

512.

Sijk, Stor-sijk. *Faun. suec. No.*

352.

Gwiniad. *Phil. Transf.* 1767.

211.

Adelfisch, Gangfisch, Weifs-

fisch, Weisser Blauling, Schna-

pel. *Wulff Boruss.* 37.

Reinankl. *Kram.* 389.

THIS fish is an inhabitant of several of the lakes of the *Alpine* parts of *Europe*. It is found in those of *Suitzerland*, *Savoy*, and *Italy*; of *Norway*, *Sueden*, *Lapland**, and *Scotland*; in those of *Ireland*, and of *Cumberland*; and in *Wales*, in that of *Llyntegid*, near *Bala*, in *Merionethshire*.

* *Schæffer*, in his *History of Lapland*, p. 140. says, that these fish are caught there of the weight of ten or twelve pounds. We wish *Linnaeus* had executed his intention of favoring the world with his *Lachesis Lapponica*, in which he promised a complete history of that country. I once reminded him of it, and it is with true regret, that I give his answer:—*Nunc nimis serâ inciperem,*

Me quoque debilitat series immensa laborum,

Ante meum tempus cogor et esse senem:

Firma sit illa licet solvetur in æquore navis,

Quæ nunquam liquidis sicca carebit aquis.

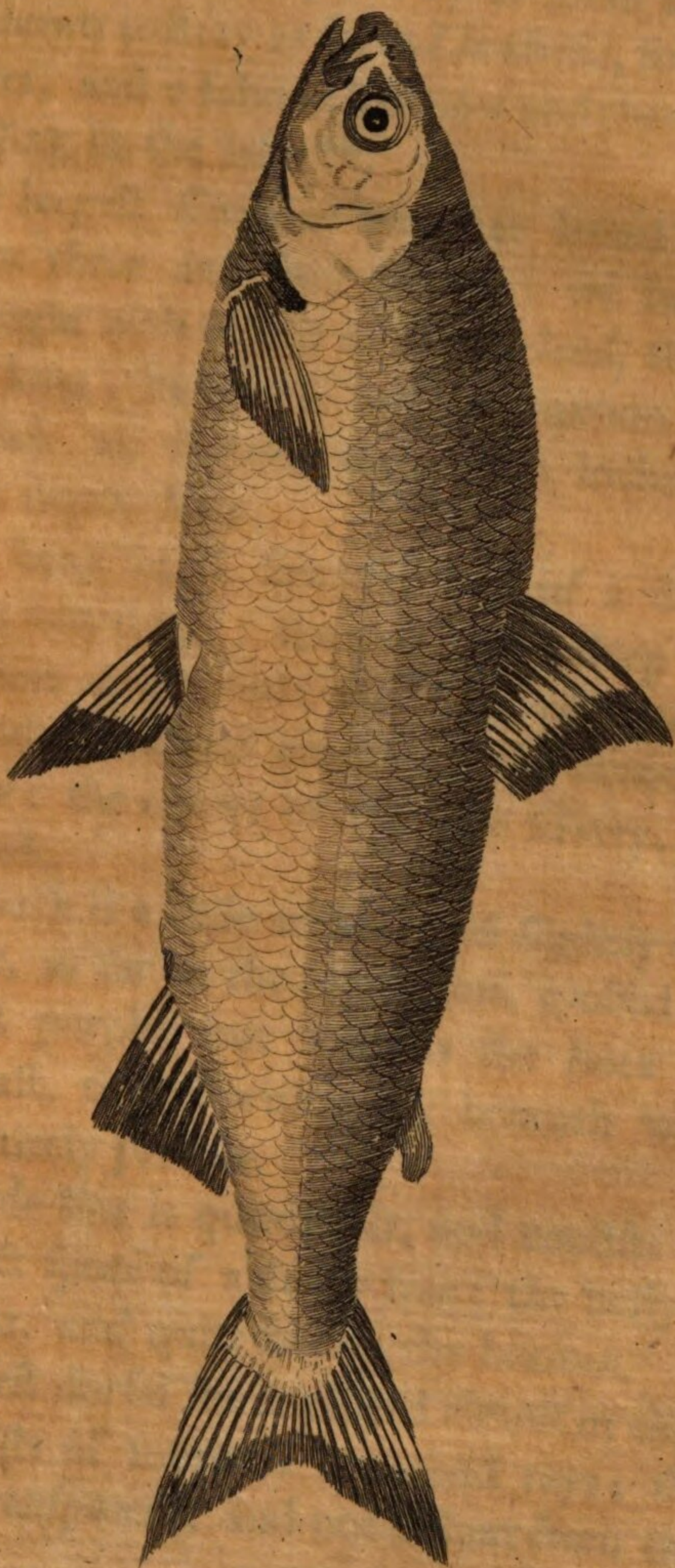
It is the same with the *Ferra* of the lake of *Geneva*, the *Schelly**, of *Hulse-water*, the *Pollen* of *Lough Neagh*, and the *Vangis* and *Juvangis* of *Loch Mabon*. The *Scotch* have a tradition that it was first introduced there by the beauteous queen, their unhappy *Mary Stuart*; and as in her time the *Scotch* court was much frenchified, it seems likely that the name was derived from the *French*, *vendoise*, a dace; to which a slight observer might be tempted to compare it from the whiteness of its scales. The *British* name *Gwiniad*, or whiting, was bestowed on it for the same reason.

It is a gregarious fish, and approaches the shores in vast shoals in spring and in summer, which prove in many places a blessed relief to the poor of inland countries, in the same degree as the annual return of the herring is to those who inhabit the coasts. The Rev. Mr. *Farrish*, of *Carlisle*, wrote me word, that he was assured by a *Hulse-water* fisherman, that last summer he took between seven and eight thousand at one draught. I must not pass by that gentleman without acknowledging my obligations to him for an account of the *Charrs* and the *Schelly*; he being one of the valuable embellishers of this work, for whom I am indebted to the friendship of his late worthy prelate.

The *Gwiniad* is a fish of an insipid taste, and must be eaten soon, for it will not keep long; those that choose to preserve them do it with salt. They die very soon after they are taken. Their spawning season in *Llyntegid* is in *December*.

* The inhabitants of *Cumberland* give this name also to the chub, from its being a scaly fish.

GWINIAD.



J. Wilson sculp

J. Magell sculp

It has long ago been observed in *Cambden**, that these fish never wander into the *Dee*, nor the salmon never ventures into the lake: this must be allowed to be generally the case; but by accident the first have been known to stray as far as *Llandrillo*, six miles down the river, and a salmon has now and then been found trespassing in the lake**.

The largest *Gwiniad* we ever heard of weighed between three and four pounds: we have a *Ferra* we brought with us out of *Suitzerland*, that is fifteen inches long; but these are uncommon sizes: the fish which we describe was eleven inches long, its greatest depth three.

The head small, smooth, and of a dusky hue: the eyes very large: the pupil of a deep blue: the nose blunt at the end: the jaws of equal length: the mouth small and toothless: the branchiostegous rays nine: the covers of the gills silvery, powdered with black.

The back is a little arched, and slightly carinated: the color, as far as the lateral line, glossed with deep blue and purple, but towards the lines assumes a silvery cast, tinged with gold, beneath which those colors entirely prevale.

The side line is quite strait, and consists of a series of distinct spots of a dusky hue: the belly is a little prominent, and quite flat on the bottom.

The first dorsal fin is placed almost in the middle, and consists of fourteen branched rays; the second is thin, transparent, and not distant from the tail.

* *Vol. ii. 790.*

** *Hon. Mr. D. Barrington's Letter to Dr. Watson. Phil. Trans. 1767.*

The pectoral fins had eighteen rays, the first the longest, the others gradually shortening; the ventral fins were composed of twelve, and the anal of fifteen, all branched at their ends; the ventral fins in some are of a fine sky blue, in others as if powdered with blue specks; the ends of the other lower fins are tinged with the same color.

The tail is very much forked: the scales large, and adhere close to the body.

Genus XXXV. Upper jaw shorter than the lower.
Body long, slender, compressed
sideways.
One dorsal fin placed near
the tail. PIKE.

I. The P I K E.

Lucius. <i>Aufonii Mosella</i> , 122.	Pike, or Pickerel. <i>Wil. Ictb.</i>
Luccio. <i>Salvian.</i> 94.	236. <i>Raii syn. pisc.</i> 112.
Le Brochet. <i>Belon.</i> 292. <i>Itin.</i>	<i>Esox rostro plagioplateo. Arted.</i>
104.	<i>synon.</i> 26.
Lucius. <i>Rondel. fluviat.</i> 188.	<i>Esox Lucius. Lin. syst.</i> 516.
<i>Gesner pisc.</i> 500.	<i>Gronov. Zooph. No.</i> 361.
Heket, Hecht. <i>Schonevelde.</i>	<i>Gjadda. Faun. suec. No.</i> 355.
44.	<i>Hecht. Kram.</i> 388.

THE pike is common in most of the lakes of Europe, but the largest are those taken in Lapland, which, according to Schæffer, are sometimes eight feet long. They are taken there in great abundance, dried, and exported for sale. The largest fish of this kind which we ever heard of in England, weighed thirty-five pounds,

All

All writers who treat of this species bring instances of its vast voraciousness. We have known one that was choaked by attempting to swallow one of its own species that proved too large a morsel. It does not confine itself to feed on fish and frogs; it will devour the water rat, and draw down the young ducks as they are swimming about. In a manuscript note which we found, p. 244, of our copy of *Plott's History of Staffordshire*, is the following extraordinary fact: "At Lord Gower's canal at *Trentbam*, a pike seized the head of a swan as she was feeding under water, and gorged so much of it as killed them both. The servants perceiving the swan with its head under water for a longer time than usual, took the boat, and found both swan and pike dead*."

But there are instances of its fierceness still more surprizing, and which indeed border a little on the marvellous. *Gesner* ** relates, that a famished pike in the *Rhone* seized on the lips of a mule that was brought to water, and that the beast drew the fish out before it could disengage itself. That people have been bit by these voracious creatures while they were washing their legs, and that they will even contend with the otter for its prey, and endeavour to force it out of its mouth†.

Small fish shew the same uneasiness and detestation at the presence of this tyrant, as the little

* This note we afterwards discovered was wrote by Mr. *Plott*, of *Oxford*, who assured me he inserted it on good authority.

** *Gesner pisc.* 503.

† *Walton.* 157.

birds do at the sight of the hawk or owl. When the pike lies dormant near the surface (as is frequently the case) the lesser fish are often observed to swim around it in vast numbers, and in great anxiety. Pike are often haltered in a noose, and taken while they lie thus asleep, as they are often found in the ditches near the *Thames* in the month of *May*.

In the shallow water of the *Lincolnshire* fens they are frequently taken in a manner peculiar, we believe, to that county, and the isle of *Ceylon* *. The fishermen makes use of what is called a crown-net, which is no more than a hemispherical basket, open at top and bottom. He stands at the end of one of the little fen-boats, and frequently puts his basket down to the bottom of the water, then poking a stick into it, discovers whether he has any booty by the striking of the fish; and vast numbers of pike are taken in this manner.

Longevity.

The longevity of this fish is very remarkable, if we may credit the accounts given of it. *Rzaczynski* ** tells us of one that was ninety years old; but *Gesner* † relates, that in the year 1497, a pike was taken near *Hailbrun*, in *Suabia*, with a brazen ring affixed to it, on which were those words in Greek characters: *I am the fish which was first of all put into this lake by the hands of the governor of the universe, FREDERICK the Second, the 5th of October, 1230:*” so that the former must have been an infant to this *Metusalem* of a fish.

* *Knox's Hist. Ceylon*, 28.

** *Hist. Nat. Poloniæ*, 152.

† *Icones piscium*, 316, where a print of the ring is given.

Pikes spawn in *March* or *April*, according to the coldness or warmth of the weather. When they are in high season their colors are very fine, being green, spotted with bright yellow ; and the gills are of a most vivid and full red. When out of season, the green changes to grey, and the yellow spots turn pale.

The head is very flat ; the upper jaw broad, Descr. and is shorter than the lower : the under jaw turns up a little at the end, and is marked with minute punctures.

The teeth are very sharp, disposed only in the front of the upper jaw, but in both sides of the lower, in the roof of the mouth, and often the tongue. The slit of the mouth, or the gape, is very wide ; the eyes small.

The dorsal fin is placed very low on the back, and consists of twenty-one rays ; the pectoral of fifteen ; the ventral of eleven ; the anal of eighteen.

The tail is bifurcated.

II. The S E A P I K E.

- Βελόνη. *Arist. Hist. an.* ii. c. 15. &c.
 Βελόνη, Ραφίς? *Athenæus. lib.* vii. 319.
 Acus, five Belone *Plinii lib.* ix. c. 51.
 Acuchia. *Salvian.* 68.
 L'Aguille, ou Orphie. *Belon.* 161.
 Acus prima species. *Rondel.* 227. *Gesner pisc.* 9.
 Horn-fisck. *Schonevelde.* 11.
 Horn-fish, or Gar-fish. *Wil. Ich.* 231. *Raii syn. pisc.* 109.
 Esox rostro cuspidato gracili subtereti, et spithamali, *Arted. synon.* 27.
 Esox Belone. E. rostro utraque maxilla dentata. *Lin. syst.* 517. *Gronov. Zooph.* No. 362.
 Nabbgjadda, Horngiall. *Faun. suec.* No. 156.
 See-naadel, Sack-nadel. *Wulff Boruss.* No. 70.

THIS fish which is known in many places, is known by the name of the *Sea Needle*. It comes in shoals on our coasts in the beginning of summer, and precedes the mackrel: it has a resemblance to it in taste, but the light green, which stains the back bone of this fish when boiled, gives many people a disgust to it.

Mr. Ray tells us, that when he was in *Cornwall*, the fishermen gave him the names of two species of this fish, one they called *Girrocks*, the other *Skippers*; these we may suppose to be the common kind, the other (according to Mr. Jago's conjecture) is probably the same with the *Saurus* of *Rondeletius*, p. 232, which both those ichthyologists agree has a shorter nose than the common species. We have no other description of this fish than what is left us by *Rondeletius*, who says, that it is shorter and thicker than the other; that the nose is shorter and turns up; that

the edges of the jaws are serrated ; and that between the anal fin and the tail it has several spurious fins like the mackrel. We do not venture to make a distinct article of this fish, because Mr. *Jago* has not pointed out the specific difference ; but we thought it necessary to give this brief description of it from *Rondeletius*, to supply that defect in case the *Saurus* should prove a *British* fish.

The common sea pike, or sea needle, sometimes Descr. grows to the length of three feet, or more.

The jaws are very long, slender, and sharp pointed ; the under extends much farther than the upper, and the edges of both are armed with numbers of short slender teeth : the inside of the mouth is purple : the tongue small : the eyes large : the irides silvery : the nostrils wide and round.

The body is slender : the belly quite flat, bounded on both sides by a rough line.

The pectoral fins consist of twelve rays ; the ventral fins small, and placed very remote from the head, consists of six rays, the first spiny.

The dorsal fin lies on the very lower part of the back, consists of eighteen rays ; the first are high, the others lower as they approach the tail ; the anal fin is of the same form, and placed opposite the other : the tail is forked.

The colors are extremely beautiful when the fish is in the water : the back of a fine green, beneath that appears a rich changeable blue and purple : the sides and belly are of a fine silvery hue.

Genus XXXVI. Teeth in the jaws and tongue.
 Eight branchiostegous rays.
 Vent near the tail.
 The ventral fins composed of
 many rays. ARGENTINE.

I. The A R G E N T I N E.

Sphyræna parva, five sphyræna	Argentina. <i>Arted. synon.</i> 17.
secunda species. <i>Rondel.</i> 227.	Argentina <i>Sphyræna.</i> <i>Lin. syst.</i>
<i>Gesner pisc.</i> 883.	518. <i>Gronov. Zooph.</i> No.
<i>Pisciculus Romæ, Argentina</i>	349.
<i>dictus. Wil. lctb.</i> 229. <i>Raii</i>	
<i>syn. pisc.</i> 108.	

THIS species was communicated to us by Mr. *Brunnich*, who saw it taken off the isle of *Sheppy*, and is, according to Doctor *Gronovius*, common in the mouth of the *Schelde* during autumn.

It is a small fish of a slender form: the nose is sharp pointed: the teeth very minute: the eyes large.

On the back is one small fin, consisting of ten soft rays; the pectoral of about fourteen; the ventral of eleven; the anal of nine: the tail is forked.

The back is green: the sides beneath the lateral line silvery.

Mr. *Willoughby*, from whom we borrow this description, says, that the outside of the air bladder of this fish consists of a foliaceous silvery skin, which was made use of in the manufacture of artificial pearl.

Genus XXXVII. The upper jaw a little flat.
Six branchiostegous rays.
A silvery stripe along the side.

ATHERINE.

I. The A T H E R I N E.

Epsetus? *Belon*, 209.

Εψητος, *Atherina*. *Rondel.*

215, 216. *Bossuet* *Epig.* 66.

67. *Gesner* *pisc.* 71, 72.

Pisciculus Anguella Venetiis dictus; forte *Hepsetus Rondeletii*, vel *Atherina* ejusdem.

Wil. Ictb. 209. *Raii syn. pisc.*

79.

Atherina. *Arted. synon. App.* 116.

Atherina Hepsetus. *A. pinna* ani radiis fere duodecim. *Lin. syst.* 519. *Gronov. Zooph.* No. 399.

IT is also to the same gentleman that we are indebted for our knowledge of this being a *British* fish, it having been seen by him at the same place with the former.

Mr. *Willoughby* describes it as not exceeding three inches and a quarter in length: its form is slender: the body covered with scales, and entirely pellucid, except where the back bone and intestines lie: the back is spotted with black: the sides are silvery: when the scales are taken off it appears that every four spots form a rhombic figure.

On the back are two fins; the first consists of seven, the second of eleven rays; the pectoral of fourteen; the ventral of six; the anal of fourteen.

The tail, according to Doctor *Gronovius*, bifurcated*.

* *Mar. Icthyol.* I. No. 66.

Genus XXXVIII. Body and covers of the gills clothed with large scales.

Six incurvated branchiostegous rays.

Teeth on the tongue and in the palate only. MULLET.

I. The M U L L E T.

Κεφαλος, Κεσρέυς. *Arist. Hist. an. lib. v. c. 11, &c.*

Κεσρέυς. *Oppian Halieut. iii. 98. Athenæus lib. vii. 306.*

Mugil *Ovid Halieut. 37. Plinii lib. ix. c. 8. 17.*

Cephalo. *Salvian. 75.*

Le Mulet. *Belon. 205.*

Cephalus. *Rondel. 260. Gesner pisc. 549.*

Mullet. *Wil. Ictb. 274. Raii syn. pisc. 84.*

Mugil. *Arted. synonym. 52.*

Mugil cephalus. M. pinna dorsali anteriore quinque radiate. *Lin. syst. 520. Gronov. Zooph. No. 397.*

THE mullet is justly ranked by *Aristotle* among the *Pisces Littorales*, or those that prefer the shores to the full sea: they are found in great plenty on several of the sandy coasts of our island, and haunt in particular those small bays that have influxes of fresh water. They come in great shoals, and keep rooting like hogs in the sand or mud, leaving their traces in form of large round holes. They are very cunning, and when surrounded with a net, the whole shoal frequently escapes by leaping over it, for when one takes the lead, the others are sure to follow: this circumstance is taken notice of by *Oppian*; whether the latter part of his observation is true, is what we are uncertain.

Κεσρεὺς μὲν πλεκίῃσιν ἐν ἀγκύινῃσι λίνοιο,
 Ελκόμεν^Θ δόλον ἔτι περιδρομον ἠγνοίησεν.
 Ὡς δ' ἀναθρώσκει λελητημένος ὕδατος ἄκρη,
 Ορθὸς ἄνω σπεύδων ὅσον σθένος ἄλματι κέφῳ
 Ορμήσαι· βελῆς δὲ σαόφρονος ἐκ ἐμάτησε·
 Πολλάκι γὰρ ῥιπῇσι καὶ ὕδατα πείσματα φελλῶν
 Ρηϊδίως ὑπερᾶλτο, καὶ ἐξήλυξε μόροιο.
 Εἰ δ' ὅγ' ἀνορμηθεὶς πρῶτον εὖλον, αὖτις ὀλιθῇ
 Ες βρόχον, ἐκ ἔτ' ἔπειτα βιάζεται, ἐδ' ἀνορέει,
 Αχνύμενος· πείρη δὲ μαθὼν ἀποπαύεται ὀρμῆς.

The Mullet*, when encircling seines inclose,
 The fatal threads and treach'rous bosom knows.
 Instant he rallies all his vig'rous powers,
 And faithful aid of every nerve implores;
 O'er battlements of cork up-darting flies,
 And finds from air th'escape that sea denies.
 But should the first attempt his hopes deceive,
 And fatal space th'imprison'd fall receive,
 Exhausted strength no second leap supplies;
 Self-doom'd to death the prostrate victim lies,
 Resign'd with painful expectation waits,
 'Till thinner elements compleat his fates. JONES.

Oppian had good opportunity of examining these fish, for they swarm during some seasons on the coasts of the *Mediterranean*. Near *Martegues*, in the south of *France*, abundance of mullets are taken in weres made of reeds placed in the shallows. Of the milts of the males, which are there called *Allerants*, and of the roes of the females, which are called *Botar*, is made *Botargo*. The materials are taken out entire, covered with salt for four or five hours, then pressed a little between two boards or stones, washed, and at last dried in the sun for thirteen or fourteen days**.

* Mr. Jones, by mistake, translates it, the *Barbel*.

** Mr. Willoughby's notes during his travels. Vide Harris's Col. Voy. II. 721.

This fish was sometimes made the instrument of a horrible punishment for unfortunate gallants. It was in use both at *Athens** and at *Rome*; but we doubt much whether it was a legal one: for we rather suspect it was inflicted instantaneously by the injured and enraged husband, at a season when

Furor arma ministrat.

Juvenal seems to speak of it in that light as well as *Horace*: the former, relating the revenge taken by the exasperated spouse, describes it as very various;

*Necat hic ferro, secat ille cruentis
Verberibus, quosdam mæchos et MUGILIS intrat**.*

The passage in *Horace* seems not to have been attended to by the critics; but when he mentions the distresses that the invader of another's bed underwent, he most certainly alludes to this penalty:

*Discinctâ tunicâ fugiendum est, ac pede nudo;
Ne nummi pereant, aut PYGA, aut denique fama†.*

The mullet is an excellent fish for the table, but at present not a fashionable one.

Descr.

The head is almost square, and is flat on the top: the nose blunt: lips thick. It has no teeth, only in the upper lip is a small roughness: between the eyes and the mouth is a hard callus.

* *Legibus Atheniensium adulteri εν ἔργῳ deprehensi pœna fuit παφανόδωσις. Raphani loco utebantur nonnunquam mugile pisce, interdum scorpione. Causauboni animadvers: in Athenæum. lib. I. c. 5. tom. ii. edit. Lugd. 1621.*

** *Satyr. x. 316.*

† *Satyr. ii. lib. I. 132.*

The pupil of the eye is black, encircled with a small silvery line : the upper part of the iris is hazel ; the lower silvery.

The form of the body is pretty thick, but the back not greatly elevated. The scales are large and deciduous.

The first dorsal fin is placed near the middle of the back, and consists of four strong spines ; the second of nine soft branching rays ; the pectoral has sixteen, the ventral six ; the first a strong spine, the others soft.

The tail is much forked.

The color of the back is dusky, varied with blue and green : the sides silvery, marked with broad dusky parallel lines, reaching from head to tail : the belly is silvery.

Genus XXXIX. Head covered with scales.

Pectoral fins almost as long as the body.

FLYING FISH.

I. The FLYING FISH.

Hirundo Plinii lib. ix. c. 26.

* Εξώκοιτος και Ἀδωνις ?

Athenæus. lib. viii. 332. Op-

pian Halieut. I. 157. Χελιδων?

Oppian ii. 459.

Rondine. Salvian. 186.

Hirondelle de mer. Belon. 189.

Mugil alatus. Rondel. 267. Ges-

ner pisc. 553. Wil. Ictb. 233.

Exocætus. Arted. synon. 18

Exocætus volitans. E. abdo-

mine utrinque carinato. Lin.

syst. 520. Amæn. Acad. I. 603.

Gronov. Zooph. No. 359.

WE can produce but a single instance of this species** being taken on the *British* coasts. In June 1765, one was caught at a small distance below *Caermarthen*, in the river *Towy*, being brought up by the tide which flows as far as the town. It is a fish frequent enough in the *Mediterranean*, and also in the ocean, where it leads a most miserable life. In its own element it is perpetually harassed by the *Dorados*, and other fish of prey. If it endeavors to avoid them by having recourse to the air, it either meets its fate from the *Gulls*, or the *Albatrosses*, or is forced down again into the mouth of

* *Pliny* mentions it under the same name, *lib. ix. c. 19.*

** This fish was seen by *John Strange, Esq;* at *Caermarthen*, who was so obliging as to communicate to me the account of it.

the inhabitants of water, who below keep pace with its aerial excursion. Neither is it unfrequent that whole shoals of them fall on board of ships that navigate the seas of warm climates: it is therefore apparent, that nature in this creature hath supplied it with instruments that frequently bring it into that destruction it strives to avoid, by having recourse to an element unnatural to it.

The antients were acquainted with this species: *Pliny* mentions it under the name of *Hirundo*, and speaks of its flying faculty. It is probable that *Oppian* intended the same by his *Ωκειαί χελιδόνες*, or the *swift swallow* fish. What *Athenæus* and the last cited author mean by the *Εξοκοίτος* and *Αδωνίς*, is not so evident: they assert it quitted the water and slept on the rocks, from whence it tumbled with precipitation when disturbed by the unfriendly birds: on these accounts Ichthyologists seem to have made it synonymous with the *flying fish*.

It resembles the herring in form of the body, but the back is flat: the scales large and silvery: the dorsal fin is small, and placed near the tail: the pectoral fins, the instruments of flight, are almost as long as the body: the tail is bifurcated.

Descr.

Genus XL. Eight branchiostegous rays.

The belly extremely sharp, and often
ferrated.

HERRING.

I. The H E R R I N G.

Aringha ex cimbricis littoribus.

Jovius. 143.

Hareng, espece de Chalcis.

Belon. 169.

Harengus. *Rondel.* 222. *Gesner*

pisc. 410.

Heringk. *Schonevelde.* 37.

Herring. *Wil. Ictb.* 219. *Raii*

syn. pisc. 103.

Clupea maxilla inferiore longi-
ore maculis carens. *Arted.*

synon. 14. α . β .

Clupea Harengus. *Cl. im-*

maculata, maxilla inferiore

longiore. *Lin. syst.* 522.

Gronov. Zooph. No. 348.

Sill. Faun. suec. No. 357. α .

Stromming. Faun. suec. No.

357. β .

Stromling. Wulff. Boruss.* No.

59.

Name.

THE herring was unknown to the antients, notwithstanding the words $\chi α λ κ ι ς$ and $μ α ι ν ι ς$, are by translators rendered *Halec* **. The characters given of those fish are common to such numbers of different species, as render it impossible to say which they intended.

Place.

Herrings are found from the highest northern latitudes yet known, as low as the northern coasts of *France*; and excepting one instance brought by *Dod* †, of a few being once taken in the Bay of *Tangier*, are never found more southerly.

* The herring of the *Baltic*, in all respects is like ours, but smaller.

** Which word, in spite of all *lexicographers*, never signified any thing but the *garum* or pickle. *Vide p.* 221.

† *Natural Hist. of the Herring, p.* 27.

They

They are met with in vast shoals on the coast of *America*, as low as *Carolina*. In *Chesapeak Bay* is an annual inundation of those fish, which cover the shores in such quantities as to become a nuisance*. We find them again in the seas of *Kamtzchatka*, and possibly they reach *Japan*; for *Kæmpfer* mentions, in his account of the fish of that country, some that are congenerous.

The great winter rendezvous of the herring is within the *Arctic* circle: there they continue for many months in order to recruit themselves after the fatigue of spawning, the seas within that space swarming with insect food, in a degree far greater than in our warmer latitudes.

This mighty army begins to put itself in motion in the spring; we distinguish this vast body by that name, for the word herring is derived from the *German*, *Heer*, an army, to express their numbers. Migrations.

They begin to appear off the *Shetland* isles in *April* and *May*; these are only forerunners of the grand shoal which comes in *June*, and their appearance is marked by certain signs by the numbers of birds, such as gannets, and others which follow to prey on them: but when the main body approaches, its breadth and its depth is such as to alter the appearance of the very ocean. It is divided into distinct columns of five or six miles in length, and three or four in breadth, and they drive the water before them with a kind of rippling: sometimes they sink for the space of ten or fifteen minutes, then rise

* *Catesby Carol.* ii. xxxiii.

again to the surface, and in bright weather reflect a variety of splendid colors, like a field of the most pretious gems, in which, or rather in a much more valuable light, should this stupendous gift of Providence be considered by the inhabitants of the *British* isles.

Separation.

The first check this army meets in its march southward, is from the *Shetland* isles, which divide it into two parts; one wing takes to the east, the other to the western shores of *Great-Britain*, and fill every bay and creek with their numbers; others pass on towards *Yarmouth*, the great and antient mart of herrings; they then pass thro' the *British* channel, and after that in a manner disappear. Those which take to the west, after offering themselves to the *Hebrides*, where the great stationary fishery is, proceed towards the north of *Ireland*, where they meet with a second interruption, and are obliged to make a second division; the one takes to the western side, and is scarce perceived, being soon lost in the immensity of the *Atlantic*; but the other, which passes into the *Irish* sea, rejoices and feeds the inhabitants of most of the coasts that border on it.

These brigades, as we may call them, which are thus separated from the greater columns, are often capricious in their motions, and do not shew an invariable attachment to their haunts. We have had in our time instances of their entirely quitting the coasts of *Cardiganshire*, and visiting those of *Caernarvonshire* and *Flintshire*, where they continued for a few years, but in the present year have quite deserted our sea, and returned to their old seats. The
season

season of their appearance among us was very late, never before the latter end of *November* : their continuance till *February*.

Were we inclined to consider this partial migration of the herring in a moral light, we might reflect with veneration and awe on the mighty Power which originally impressed on this most useful body of his creatures, the instinct that directs and points out the course, that blesses and enriches these islands, which causes them at certain and invariable times to quit the vast polar deeps, and offer themselves to our expecting fleets. That benevolent Being has never, from the earliest records, been once known to withdraw this blessing from the whole, tho' he often thinks proper to deny it to particulars ; yet this partial failure (for which we see no natural reason) should fill us with the most exalted and grateful sense of his Providence, for impressing so invariable and general instinct on these fish towards a southward migration, when the whole is to be benefited, and to withdraw it only when a minute part is to suffer.

This instinct was given them, that they might remove for the sake of depositing their spawn in warmer seas, that would mature and vivify it more assuredly than those of the frigid zone. It is not from defect of food that they set themselves in motion, for they come to us full and fat, and on their return are almost universally observed to be lean and miserable. What their food is near the pole, we are not yet informed ; but in our seas they feed much on the *Oniscus Marinus*, a crustaceous insect, and sometimes on their own fry.

Provi-
dential
instinct.

Spawning.

Food.

They

Return.

They are in full roe the end of *June*, and continue in perfection till the beginning of winter, when they begin to deposit their spawn. The young herrings begin to approach the shores in *July* and *August*, and are then from half an inch to two inches long: those in *Yorkshire* are called *Herring Sile* *. Tho' we have no particular authority for it, yet as very few young herrings are found in our seas during winter, it seems most certain that they must return to their parental haunts beneath the ice, to repair the vast destruction of their race during summer, by men, fowl and fish. Some of the old herrings continue on our coasts the whole year: the *Scarborough* fishermen never put down their nets but they catch a few; but the numbers that remain are not worth mention in comparison to the numbers that return.

Descr.

Herrings vary greatly in size. Mr. *Travis* communicated to me the information of an experienced fisher, who informed him that there is sometimes taken near *Yarmouth*, a herring distinguished by a black spot above the nose; and that he once saw one that was twenty-one inches and an half long. He insisted that it was a different species, and varied as much from the common herring as that does from the pilchard. This we mention in order to incite some curious person on that coast to a farther enquiry.

The eye is very large: the edges of the upper jaw and the tongue are very rough, but the whole mouth

* The *Sueaes* and *Danes* call the old herring *Sill*; but the people of *Slesw* from whence the *Anglo-Saxons* came call the fry *Sylen*.

is void of teeth: the gill covers are very loose, and open very wide; which occasions the almost instant death of the herring when taken out of the water, which is well known, even to a proverb.

The dorsal fin consists of about seventeen rays, and is placed beyond the centre of gravity, so that when the fish is suspended by it, the head immediately dips down: the two ventral fins have nine rays; the pectoral seventeen; the anal fourteen: the tail is much forked.

The lateral line is not apparent, unless the scales are taken off: the sides are compressed: the belly sharply carinated, but the ridge quite smooth, and not in the least serrated.

The scales are large, thin, and fall off with a slight touch.

The color of the back and sides green, varied with blue: the belly silvery. Color.

The herring fishery is of great antiquity: the industrious *Dutch* first engaged in it about the year 1164: they were in possession of it for several centuries, but at length its value became so justly to be known, that it gave rise to most obstinate and well-disputed wars between the *English* and them; but still their diligence and skill gives them a superiority over us in that branch of trade. Fishery.

Our great stations are off the *Shetland* and *Western Isles*, and off the coast of *Norfolk*, in which the *Dutch* also share. *Yarmouth* has long been famous for its herring fair*; that town is obliged, by its

* This fair was regulated by an act, commonly called the *Statute of Herrings*, in the 31st year of *Edward III.*

charter, to send to the sheriffs of *Norwich* one hundred herrings, to be made into twenty-four pies, by them to be delivered to the lord of the manor of *East Carleton*, who is to convey them to the king*. The facetious Doctor *Fuller*** takes notice of the great repute the county of *Norfolk* was in for this fish, and, with his usual archness, calls a red herring a *Norfolk Capon*.

The *Dutch* are most extravagantly fond of this fish when it is pickled. A premium is given to the first bus that arrives in *Holland* with a lading of this their *ambrosia*, and a vast price given for each keg. We have been in the country at that happy minute, and observed as much joy among the inhabitants on its arrival, as the *Ægyptians* shew on the first overflowing of the *Nile*. *Flanders* had the honor of inventing the art of pickling herrings. One *William Beukelen*, of *Biervlet*, near *Sluys*, hit on this useful expedient: from him was derived the name *pickle*, which we borrow from the *Dutch* and *German*. It is very singular that most nations give the name of their favorite dish to the facetious attendant on every mountebank. Thus the *Dutch* call him PICKLE HERRING; the *Italians*, MACARONI; the *French*, JEAN POTTAGE; the *Germans*, HANS WURST†; and we dignify him with the title of JACK PUDDING.

* *Cambden Britan.* I. 458.

** *British Worthies.* 238.

† That is, *Jack Sausage*.

II. The P I L C H A R D.

Pilchard. *Fuller's Brit. Worthies.*

194.

Peltzer. *Schonevelde.* 40.The Pilchard. *Wil. Ictb.* 223.*Raii syn. pisc.* 104.Clupea δ . *Arted. synon.* 16.Pilchard. *Borlase Cornwall.*

272.

THE pilchard appears in vast shoals off the *Cornish* coasts about the middle of *July*, disappear the beginning of winter, yet sometimes a few return again after *Christmas*. Their winter retreat is the same with that of the herring, and their motives for migrating the same. They affect, during summer, a warmer latitude, for they are not found in any quantities on any of our coasts except those of *Cornwall*, that is to say, from *Fowey* harbor to the *Scilly* isles, between which places the shoals keep shifting for some weeks.

The approach of the pilchard is known by much the same signs as those that indicate the arrival of the herring. Persons, called in *Cornwall* *Huers*, are placed on the cliffs, to point to the boats stationed off the land the course of the fish. By the 1st of *James I.* c. 23, fishermen are empowered to go on the grounds of others to *bue*, without being liable to actions of trespass, which before occasioned frequent lawsuits.

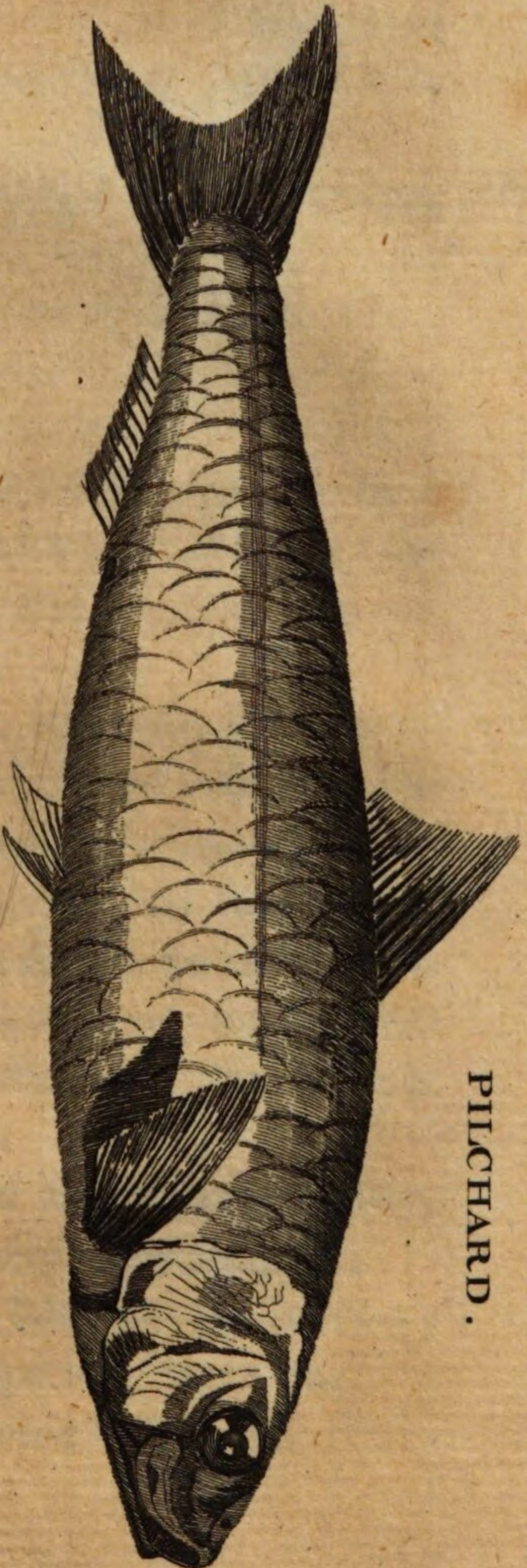
The emoluments that accrue to the inhabitants of that county are great, and are best expressed in the words of Doctor *W. Borlase*, in his account of the *Pilchard* fishery.

“ It

“ It employs a great number of men on the sea,
“ training them thereby to naval affairs; employs
“ men, women, and children, at land, in salting,
“ pressing, washing, and cleaning, in making
“ boats, nets, ropes, casks, and all the trades de-
“ pending on their construction and sale. The
“ poor is fed with the offals of the captures, the
“ land with the refuse of the fish and salt, the mer-
“ chant finds the gains of commission and honest
“ commerce, the fisherman the gains of the fish.
“ Ships are often freighted hither with salt, and
“ into foreign countries with the fish, carrying off
“ at the same time part of our tin. The usual
“ produce of the number of hogsheds exported
“ each year, for ten years, from 1747 to 1756 in-
“ clusive, from the four ports of *Fawey*, *Falmouth*,
“ *Penzance*, and *St. Ives*, it appears that *Fawey* has
“ exported yearly 1732 hogsheds; *Falmouth*,
“ 14631 hogsheds and two-thirds; *Penzance* and
“ *Mounts-Bay*, 12149 hogsheds and one-third;
“ *St. Ives*, 1282 hogsheds: in all amounting to
“ 29795 hogsheds. Every hogshed for ten years
“ last past, together with the bounty allowed for
“ each hogshed exported, and the oil made out
“ of each hogshed, has amounted, one year with
“ another at an average, to the price of one pound
“ thirteen shillings and three-pence; so that the
“ cash paid for pilchards exported has, at a medium,
“ annually amounted to the sum of forty-nine thou-
“ sand five hundred and thirty-two pounds ten
“ shillings.”

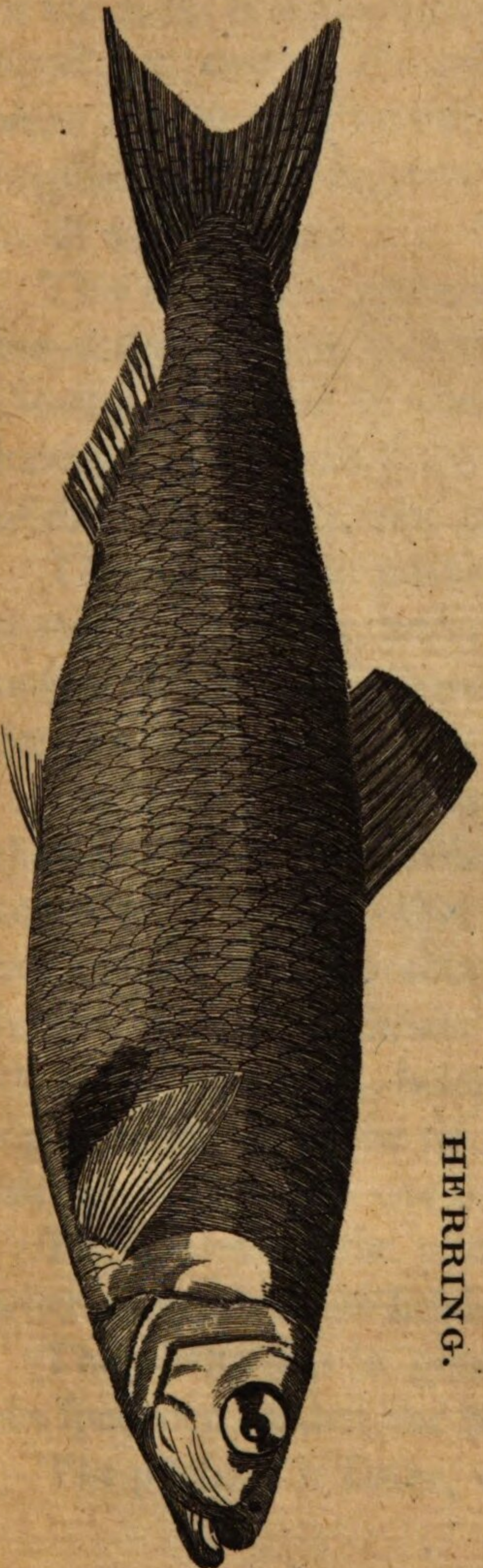
The

PILCHARD.



22.

HERRING.



G. W. Wilkinson del

J. Magill sculp

The numbers that are taken at one shooting out of the nets, is amazingly great. Doctor *Borlase* assured me, that on the 5th of *October*, 1767, there were at one time inclosed in *St. Ives's Bay* 7000 hogheads, each hoghead containing 35000 fish, in all 245000000.

This fish has a general likeness to the herring, Descr. but differs in some particulars very essentially; we therefore describe it comparatively with the other, having one of each species before us, both of them of the same length, *viz.* nine inches and an half.

The body of the pilchard is less compressed than that of the herring, being thicker and rounder: the nose is shorter in proportion, and turns up: the under jaw is shorter.

The back is more elevated: the belly less sharp: the dorsal fin of the pilchard is placed exactly in the centre of gravity, so that when taken up by it, the body preserves an equilibrium, whereas that of the herring dips at the head: the dorsal fin of the pilchard we examined, being placed only three inches eight tenths from the tip of the nose; that of the herring four inches one tenth.

The scales of the pilchard adhere very closely, whereas those of the herring very easily drop off.

The pilchard is in general less than the herring; the specimen we describe being a very large one.

The pilchard is fatter, or more full of oil.

III. The S P R A T.

Spratti. <i>Wil. Ich.</i> 221. <i>Raii</i>	<i>Clupea Sprattus.</i> Cl. pinna
<i>syn. pisc.</i> 105.	dorsali radiis tredecim. <i>Lin.</i>
<i>Clupea quadriuncialis</i> , maxilla	<i>syn.</i> 523.
inferiore longiore, ventre a-	<i>Hwusbuk. Faun. suec. No.</i>
cutissimo. <i>Arted. synon.</i> 17.	358.

MR. *Willoughby* and Mr. *Ray* were of opinion, that these fish were the fry of the herring: we are induced to dissent from them, not only because on comparing a sprat and young herring of equal size, we discovered some specific differences, but likewise for another reason: the former visits our coasts, and continue with us in shoals innumerable, when the others in general have retired to the great northern deeps.

They come into the river *Thames*, below bridge, the beginning of *November*, and leave it in *March*, and are, during their season, a great relief to the poor of the capital.

At *Gravesend*, and at *Yarmouth*, they are cured like red herrings; they are sometimes pickled, and are little inferior in flavor to the *Anchovy*, but the bones will not dissolve like those of the latter. Mr. *Forster* tells me, that in the *Baltic* they preserve them in the same manner, and call them *Breitling*, i. e. the little deep fish, as being deeper than the *Stromling*, or *Baltic* herring.

The

The sprat grows to about the length of five inches: the body is much deeper than that of a young herring of equal length: the back fin is placed more remote from the nose than that of the herring, and we think had sixteen rays. But the great distinction between this fish, the herring and pilchard, is the belly: that of the two first being quite smooth, that of the last most strongly serrated.

IV. The A N C H O V Y.

Εγκραυλος? *Arist. Hist. an. lib. vi. c. 15.*

Εγκρασίχολος? *Athenæus. lib. vii. c. 285.*

L'Anchoy? *Belon. 165.*

Encrasicholus? *Rondel. 211. Gesner pisc. 68.*

Lycostomus, sehe mareneken? *Schonevelde. 46. tab. 5.*

Anchovy. *Wil. Ictb. 225. Raii syn. pisc. 107.*

Clupea maxilla superiore longiore. *Arted. synon. 17.*

Clupea encrasicholus. *Lin. syst. 523.*

THE true anchovies are taken in vast quantities in the *Mediterranean*, and are brought over here pickled. The great fishery is at *Gorgona*, a small isle west of *Leghorn*.

Mr. *Ray* discovered what he suspected to be the same fish in the sea near *Chester**, where he described them. Notwithstanding I live near that city, and have been assured by my fisherman that they are found in our æstuary, it never has been my fortune to procure one.

* *Ray's Letters, 47.*

The *English* anchovy (according to Mr. Ray) is a palm in length, and thicker than a thumb: the body more slender, but less compressed than that of the herring, has no scales*, and is pellucid, except where the back bone runs.

It is almost of the color of a sprat: the nose is sharp: the upper mandible longer than the lower: the mouth very large for the size of the fish: the eyes large.

V. The S H A D.

Θρίσσα? <i>Arist. Hist. an. lib.</i>	Shad, or Mother of Herrings.
ix. c. 37. <i>Strabo lib. xv.</i>	<i>Wil. Ict. 227. Raii syn. pisc.</i>
486. xvii. 566. <i>Athenæus.</i>	105.
lib. iv. 131. vii. 328. <i>Oppian Halieut. I. 244.</i>	<i>Clupea apice maxilla superiore bifido, maculis nigris utrinque. Arted. synon. 15.</i>
<i>Alaufa? Ausonii Mosella. 128.</i>	<i>Clupea alofa. Cl. lateribus nigro maculatis, rostro bifido. Lin. syst. 523. Gronov. Zooph. No. 347.</i>
<i>Laccia, chiepa. Salvian. 104.</i>	
<i>L'Alofe. Belon. 307.</i>	
<i>Thrissa. Rondelet. 220. Gesner pisc. 20.</i>	
<i>Bayeke, Meyfisch. Schonevelde. 13.</i>	

NEITHER *Aristotle*, *Athenæus*, nor *Oppian*, have described their Θρίσσα with such precision, as to induce us to translate it the *Shad*, without affixing to it our sceptic mark. *Ausonius* has been

* *Schonevelde* says, the scales of his *Lycostomos* fall off very readily; perhaps Mr. Ray might see them after they had been carried some distance, when they had lost their scales.

equally negligent in respect to his *Alausa*: all he tells us is, that it was a very bad fish:

Stridentefque focus obsonia plebis ALAUSAS.

*Alausæ crackling on the embers are
Of wretched poverty, th' insipid fare.*

But commentators have agreed to render the *Θρίσσα* of the first, and the *Alausa* of the last, by the word *Shad*. Perhaps they were directed by the authority of *Strabo*, who mentions the *Θρίσσα* the supposed *Shad*, and the *Κεσπεύς*, or *Mullet*, as fish that ascend the *Nile* at certain seasons, which, with the *Dolphin** of that river, he says, are the only kinds that venture up from the sea for fear of the crocodile. That the two first are fish of passage in the *Nile*, is confirmed to us by *Belonius***, and by *Hasselquist*†. The last says it is found in the *Mediterranean* near *Smyrna*, and on the coast of *Ægypt*, near *Rosetto*; and that in the months of *December* and *January* it ascends the *Nile*, as high as *Cairo*: that it is stuffed with pot marjoram, and when dressed in that manner will very nearly intoxicate the eater.

In *Great Britain* the *Severn* affords this fish in higher perfection than any other river. It makes its first appearance there in *May*, but in very warm seasons in *April*; for its arrival, sooner or later, depends much on the temper of the air. It continues

* This is the *Dolphin* of the *Nile*, a fish now unknown to us. *Pliny lib. viii. c. 25.* says, it had a sharp fin on its back, with which it destroyed the crocodile, by thrusting it into the belly of that animal, the only penetrable place.

** *Belon. Itin. 98.*

† *P. 385. 388. Swedish edition.*

in the river about two months, and then is succeeded by a variety which we shall have occasion to mention hereafter.

The *Severn* shad is esteemed a very delicate fish about the time of its first appearance, especially in that part of the river that flows by *Gloucester*, where they are taken in nets, and usually sell dearer than salmon: some are sent to *London*, where the fishmongers distinguish them from those of the *Thames*, by the *French* name of *Alose*.

Whether they spawn in this river and the *Wye* is not determined, for their fry has not yet been ascertained. The old fish come from the sea into the river in full roe. In the months of *July* and *August*, multitudes of bleak frequent the river near *Gloucester*; some of them are as big as a small herring, and these the fishermen erroneously suspect to be the fry of the shad. Numbers of these are taken near *Gloucester* in those months only, but none of the emaciated shad are ever caught in their return*.

Twaite.

The *Thames* shad does not frequent that river till the month of *July*, and is esteemed a very insipid coarse fish. About the same time, and rather earlier, the variety called near *Gloucester* the *Twaite*, makes its appearance, and is taken in great numbers in the *Severn*, and is held in as great disrepute as the shad of the *Thames*. The differences between each variety are as follow:

The true *Shad* weighs sometimes eight pounds, but their general size is from four to five.

* *Belon* also observes, that none are taken in their return on les prend en montant contre les rivières, et jamais en descendant.

The

The *Twaite*, on the contrary, weighs from half a pound to two pounds, which it never exceeds.

The *twaite* differs from a small shad only in having one or more round black spots on the sides; if only one, it is always near the gill, but commonly there are three or four, placed one under the other*.

The other particulars agree in each so exactly, that Descri. the same description will serve for both.

The head slopes down considerably from the back, which at the beginning is very convex, and rather sharp: the body from thence grows gradually less to the tail.

The under jaw is rather longer than the upper: the teeth very minute.

The dorsal fin is placed very near the centre, is small, and the middle rays are the longest: the pectoral and ventral fins are small: the tail vastly forked: the belly extremely sharp, and most strongly serrated.

The back is of a dusky blue: above the gills Color. begins a line of dark spots, which mark the upper part of the back on each side; the number of these spots is uncertain in different fish, from four to ten.

The sides and belly are silvery.

* I must here acknowledge my obligations to Doctor *Lysons*, of *Gloucester*, for his communications relating to this fish, as well as to several other articles relating to those of the *Severn*.

Genus XLI. The mouth without teeth.
Three branchiostegous rays.
One dorsal fin. **CARP.**

With bearded mouths.

I. The C A R P.

Kυρπινος? *Arist. Hist. an. lib.* *Cyprinus cirris quatuor, offi-*
iv. 8. vi. 40. viii. 20. ii. *culo tertio pinnarum dorsi,*
30. *Oppian Halieut. l. 101. ac ani uncinulis armato.*
592. *Arted. synon. 3.*
Raina Burbara. Salvian. 92. Cyprinus Carpio. C. pinna ani
La Carpe. Belon. 267. radiis 9. cirris 4. pinna dor-
Cyprinus. Rondel. fluviat. 150. salis radio secundo postice
Gesner pisc. 309. ferrato. Lin. syst. 525. Gra-
Cyprinus nobilis, edle Karpe, nov. Zooph. No. 330.
Karpffe. Schonevelde. 32. Karp. Faun. suec. No. 359.
Carp. Wil. Ictb. 162. Raii syn.
pisc. 115.

THIS is one of the naturalized fish of our country, having been introduced here by *Leonard Mascall*, about the year 1514*, to whom we were also indebted for that excellent apple the *pepin*. The many good things that our island wanted before that period, are enumerated in this old distich:

Turkies, carps, hops, pickerel, and beer,
Came into *England* all in one year.

* *Fuller's British Worthies, Suffex. 113.*

As to the two last articles we have some doubts, the others we believe to be true. *Russia* wants these fish at this day; *Sueden* has them only in the ponds of the people of fashion; *Polish Prussia* is the chief seat of the carp; they abound in the rivers and lakes of that country, particularly in the *Frisch* and *Curisch-baff*, where they are taken of a vast size. They are there a great article of commerce, and sent in well-boats to *Sueden* and *Russia*. The merchants purchase them out of the waters of the *noblesse* of the country, who draw a good revenue from this article. Neither are there wanting among our gentry, instances of some who make good profit of their ponds.

The antients do not separate the carp from the sea fish. We are credibly informed that they are sometimes found in the harbor of *Dantzick*, between the town and a small place called *Hela*.

Carp are very long lived. *Gesner** brings an instance of one that was an hundred years old. They also grow to a very great size. On our own knowledge we can speak of none that exceeded twenty pounds in weight; but *Jovius*** says, that they were sometimes taken in the *Lacus Larius* (the *Lago di Como*) of two hundred pounds weight; and *Rzaczynski*†, mentions others taken in the *Dniester* that were five feet in length.

They are also extremely tenacious of life, and will live for a most remarkable time out of water.

* *Gesner pisc.* 312.

** *De piscibus Romanis.* 131.

† *Hist. Nat. Poloniæ.* 142.

An experiment has been made by placing a carp in a net, well wrapped up in wet moss, the mouth only remaining out, and then hung up in a cellar, or some cool place: the fish is frequently fed with white bread and milk, and is besides often plunged into water. Carp thus managed have been known, not only to have lived above a fortnight, but to grow exceedingly fat, and far superior in taste to those that are immediately killed from the pond*.

Fœcun-
dity.

The carp is a prodigious breeder: its quantity of roe has been sometimes found so great, that when taken out and weighed against the fish itself, the former has been found to preponderate. We have forbore in this work to enter into minute calculations of the numbers each fish may produce. It has already been most skilfully performed by Mr. *Harmer*, and printed in the *Philosophical Transactions* of the year 1767. We shall, in our Appendix, take the liberty of borrowing such part of his tables of the fœcundity of fish, as will demonstrate the kind attention of Providence, towards the preserving so useful a class of animals for the service of its other creatures.

These fish are extremely cunning, and on that account are by some stiled the *river fox*. They will sometimes leap over the nets, and escape that way; at others, will immerse themselves so deep in the mud, as to let the net pass over them. They are

* This was told me by a gentleman of the utmost veracity, who had twice made the experiment. The same fact is related by that pious Philosopher Doctor *Derkam*, in his *Physico-Theology*, edit. 9th. 1737. *ch.* 1. *p.* 7. *n. e.*

also very shy of taking a bait; yet at the spawning time they are so simple, as to suffer themselves to be tickled, handled, and caught by any body that will attempt it.

This fish is apt to mix its milt with the roe of other fish, from which is produced a spurious breed: we have seen the offspring of the carp and tench, which bore the greatest resemblance to the first: we have also heard of the same mixture between the carp and bream.

Spurious
breed.

The carp is of a thick shape: the scales very large, and when in best season of a fine gilded hue.

Descr.

The jaws are of equal length; there are two teeth in the jaws, or on the tongue; but at the entrance of the gullet, above and below, are certain bones that act on each other, and comminute the food before it passes down.

On each side of the mouth is a single beard; above those on each side another, but shorter: the dorsal fin extends far towards the tail, which is a little bifurcated; the third ray of the dorsal fin is very strong, and armed with sharp teeth, pointing downwards; the third ray of the anal fin is constructed in the same manner.

II. The B A R B E L.

Barbus. *Ausonius Mosella*. 94.

Barbeau. *Belon*. 299.

Barbus, Barbo. *Salvian*. 86.

Barbus. *Rondel. fluviat*. 194.

Gesner pisc. 123.

Barbe, Barble. *Schonevelde*. 29.

Barbel. *Wil. Ictb*. 259. *Raii*

syn. pisc. 121.

Cyprinus oblongus, maxilla superiore longiore, cirris qua-

tuor, pinna ani ossiculorum septem. *Arted. synon*. 8.

Cyprinus Barbus. C. pinna ani radiis 7. cirris 4. pinnae

dorsi radio secundo utrinque ferrato. *Lin. syst*. 525. *Gro-*

nov. Zooph. No. 331-

Barbe, Barble. *Wulff Boruss*. No. 52.

THIS fish was so extremely coarse, as to be overlooked by the antients till the time of *Ausonius*, and what he says is no panegyric on it; for he lets us know it loves deep waters, and that when it is grown old it was not absolutely bad.

Laxos exerceas BARBE natatus,

Tu melior pejore ævo, tibi contigit uni

Spirantum ex numero non inlaudata senectus.

It frequents the still and deep parts of rivers, and lives in society, rooting like swine with their noses in the soft banks. It is so tame as to suffer itself to be taken with the hand; and people have been known to take numbers by diving for them. In the summer they move about during night in search of food, but towards autumn, and during winter, confine themselves to the deepest holes.

They are the worst and coarsest of fresh water fish, and seldom eat but by the poorer sort of people, who

who sometime boil them with a bit of bacon to give them a relish. The roe is very noxious, affecting those who unwarily eat of it with a nausea, vomiting, purging, and a slight swelling.

It is sometimes found of the length of three feet, Deser's and eighteen pounds in weight: it is of a long and rounded form: the scales not large.

Its head is smooth: the nostrils placed near the eyes: the mouth is placed below: on each corner is a single beard, and another on each side the nose.

The dorsal fin is armed with a remarkable strong spine, sharply ferrated, with which it can inflict a very severe wound on the incautious handler, and even do much damage to the nets.

The pectoral fins are of a pale brown color; the ventral and anal tipped with yellow: the tail a little bifurcated, and of a deep purple: the side line is strait.

The scales are of a pale gold color, edged with black: the belly is white.

III. The T E N C H.

Tinca. *Ausonius Mosella*. 123.Tinca. *Jovius*. 124.Tinca, Tenca. *Salvian*. 90.La Tanche. *Belon*. 325,Tinca. *Rondel. fluviat*. 157.*Gesner pisc*. 984.Schley, Slye. *Schonevelde*. 76.Tench. *Wil. Ictb*. 251. *Raii**syn. pisc*. 117.

Cyprinus mucosus totus ni-

grescens, extremitate caudæ

æquali. *Arted. synon*. 5.

Cyprinus pinna ani radiis 25,

cauda integra, corpore mu-

coso, cirris 2. *Lin. syst*. 526.*Gronov. Zooph*. No. 328.

Suture, Linnare, Skomakare.

Faun. suec. No. 363.Schleihe, Schleggen. *Wulff Bo-**russ*. No. 55.

THE tench underwent the same fate with the barbel, in respect to the notice taken of it by the early writers; and even *Ausonius*, who first mentions it, treats it with such disrespect, as evinces the great capriciousness of taste; for that fish, which at present is held in such good repute, was in his days the repast only of the *Canaille*.

Quis non et virides vulgi solatia Tincas norit?

It has been by some called the *Physician* of the fish, and that the slime is so healing, that the wounded apply it as a styptic. The ingenious Mr. *Diaper*, in his *piscatory* ecloges, says, that even the voracious pike will spare the tench on account of its healing powers

The *Tench* he spares a medicinal kind:
For when by wounds distressed, or sore disease,
He courts the salutary fish for ease;
Close to his scales the kind physician glides,
And sweats a healing balsam from his sides*.

* *Ecl. ii.*

Whatever

Whatever virtue its slime may have to the inhabitants of the water, we will not vouch for, but its flesh is a wholesome and delicious food to those of the earth.

It does not commonly exceed four or five pounds in weight, but we have heard of one that weighed ten pounds; *Salvianus* speaks of some that arrived at twenty pounds.

They love still waters, and are rarely found in rivers: they are very foolish, and easily caught.

The tench is thick and short in proportion to its length: the scales are very small, and covered with slime.

The irides are red: there is sometimes, but not always, a small beard at each corner of the mouth.

The color of the back is dusky; the dorsal and ventral fins of the same color: the head, sides, and belly, of a greenish cast, most beautifully mixed with gold, which is in its greatest splendor when the fish is in the highest season.

The tail is quite even at the end, and very broad.

IV. The G U D G E O N.

Gobio. *Aufonius Mosella*. 132.Gobio fluviatilis. *Salvian*, 214.Goujon de riviere. *Belon*. 322.Gobio fluviatilis. *Rondel. flu-**viat*. 206. *Gesner pisc*. 399Gudgeon. *Wil. Ictb*. 264. *Raii**syn. pisc*. 123.Cyprinus quincuncialis macu-
losus, maxilla superiore lon-
giore cirris duobus ad os.
Arted. synon. 2.

Cyprinus pinna ani radiis 2.

Lin. syst. Nat. 526. *Gronov*.*Zooph. No*. 329.

ARISTOTLE mentions the gudgeon in two places; once as a river fish, and again as a species that was gregarious: in a third place he describes it as a sea fish; we must therefore consider the *Κωελος* he mentions, *lib. ix. c. 2.* and *lib. viii. c. 19.* as the same with our species*.

This fish is generally found in gentle streams, and is of a small size: those few, however, that are caught in the *Kennet*, and *Cole*, are three times the weight of those taken elsewhere. The largest we ever heard of was taken near *Uxbridge*, and weighed half a pound.

They bite eagerly, and are assembled by raking the bed of the river; to this spot they immediately crowd in shoals, expecting food from this disturbance.

Descr. The shape of the body is thick and round: the irides tinged with red: the gill covers with green and silver: the lower jaw is shorter than the upper: at each corner of the mouth is a single beard: the back

* The gudgeon is enumerated among the *Syrian* fish, by Dr. *Russel. p. 75.*

olive, spotted with black : the side line strait ; the sides beneath that silvery : the belly white.

The tail is forked ; that, as well as the dorsal fin, is spotted with black.

V. The B R E A M.

La Bremme. *Belon.* 318.

Cyprinus latus sive Brama.

Rondel. fluviat. 154. *Gesner*

pisc. 316, 317.

Brassem, Brachsem. *Schonevelde*

33.

Bream. *Wil. Ich.* 248. *Raii*

syn. pisc. 116.

Cyprinus pinnis omnibus ni-

grescentibus, pinna ani offi-
culorum viginti septem. *Ar-*
ted. synon. 4.

Cyprinus Brama. *Lin. syst.* 531.

Gronov. Zooph. No. 345.

Braxen. Faun. suec. No. 360.

Gareikl. Kram. 391. *Brekmen.*

Wulff Boruss. No. 66.

THE bream is an inhabitant of lakes, or the deep parts of still rivers. It is a fish that is very little esteemed, being extremely insipid.

It is extremely deep, and thin in proportion to its length. The back rises very much, and is very sharp at the top. The head and mouth are small : on some we examined in the spring, were abundance of minute whitish tubercles ; an accident which *Pliny* seems to have observed befalls the fish of the *Lago Maggiore*, and *Lago di Como**. The scales are very large : the sides flat and thin.

The dorsal fin has eleven rays, the second of which is the longest : that fin, as well as all

* *Duo Lacus ITALIÆ in radicibus Alpium, LARIUS et VERBANUS appellantur, in quibus pisces omnibus annis VERGILIARUM ortu existunt, squamis conspicui crebris atque præacutis, clavorum caligarium effigie : nec amplius quam circa eum mensem, visuntur. lib. ix. c. 18.*

the rest, are of a dusky color; the back of the same hue: the sides yellowish.

The tail is very large, and of the form of a crescent.

**

Without beards.

VI. The R U D.

Χαγαξ? *Athenæus. lib. viii.*

355. *Oppian Halieut. I. 174.*

La Plestia? *Belon. 309. La*
Rosse, 319.

Finscale. Plot's Oxf. 184.

Rutilus latior, seu Rubellio
fluviatilis à Rud, Roud, or

Finscale. Wil. Ictb. 252.

Raii syn. pisc. 118.

Cyprinus. Aried. synon. 6. No. 8.

Cyprinus pinna ani radiis 15.

pinnis rubris. Lin. syst. Nat.
530.

Ruda, Carussa. Faun. suec. No.
364.

THIS fish is found in the *Charwell*, near *Oxford*, and in the *Witham* in *Lincolnshire*.

Its body is extremely deep, like that of the bream, but much thicker.

Descr.

The head is small: the irides yellow, varying in some almost to redness: the nostrils large: the back vastly arched, and sloping off suddenly to the head and tail: the scales very large: the side line very slightly incurvated.

The dorsal fin consists of twenty-one rays; the first very short, the second very strong, and serrated on each side.

The tail a little forked.

The

The back is of an olive color: the sides and belly of a gold color, with certain marks of red: the ventral and anal fins, and the tail, generally of a deep red: the tail forked.

VII. The R O A C H.

La Gardon, Roschie 2. en *Angleterre*. *Belon*. 316.

Leuciscus. *Rondel. fluviat.* 191.

Rutilus sive Rubellus fluviatilis. *Gesner pisc.* 820.

Rottauge. *Schonevelde*. 63.

Roche. *Wil. Ictb.* 262. Leuciscus prior. *Rondel.* 260. *Raii syn. pisc.* 122, 121.

Cyprinus *sargus* dictus. Cyp.

iride pinnis ventralibus ac ani plerumque rubentibus.

Arted. synon. 9, 10.

Cyprinus Rutilus Cyp. pinnae radiis 12. rubicunda.

Lin. syst. 529. *Mort. Faun.*

suec. No. 372.

Zert. Wulff Boruss. No. 59.

Attl. Kram. 395.

SOUND as a roach, is a proverb that appears to be but indifferently founded, that fish being not more distinguished for its vivacity than many others; yet it is used by the *French* as well as us, who compare people of strong health to their *Gardon*, our roach.

It is a common fish, found in many of our deep still rivers, affecting, like the others of this genus, quiet waters. It is gregarious, keeping in large shoals. We have never seen them very large. Old *Walton* speaks of some that weighed two pounds. In a list of fish sold in the *London* markets, with the greatest weight of each, communicated to us by an

intelligent fishmonger, is mention of one whose weight was five pounds.

The roach is deep, but thin, and the back is much elevated, and sharply ridged: the scales large, and fall off very easily.

VIII. The D A C E.

Une vandoise, ou Dard. *Belon.*

313.

Leucisci secunda species. *Ron-*
del. 192. *Gefner pisc.* 26.

Dace, or Dare. *Wil. Ictb.* 260.

Raii syn. pisc. 121.

Cyprinus decem digitorum, ru-
tilo longior, et angustior,

pinna ani radiorum decem.

Arted. synon. 9.

Cyprinus leuciscus. *Cyp.* pin-
na ani radiis 10. dorsali 9.

Lin. syst. 528.

Laugele. Meyer's Ann. ii. tab.
97.

THIS, like the roach, is gregarious, haunts the same places, is a great breeder, very lively, and during summer is very fond of frolicking near the surface of the water. This fish and the roche are coarse and insipid meat.

Its head is small: the irides of a pale yellow: the body long and slender: its length seldom above ten inches, tho' in the abovementioned list is an account of one that weighed a pound and an half: the scales smaller than those of the roach.

The back is varied with dusky and blue: the sides and belly silvery: the dorsal fin dusky: the ventral, anal, and caudal fins red, but less so than those of the former: the tail is very much forked.

IX. The

IX. The C H U B.

Capito. *Auson. Mosella.* 85.Squalus, Squaglio. *Salvian* 84.

Le chevesne, Testard, Vilain.

Belon. 315.Cephalus fluviatilis. *Rondel.*
fluviat. 190.

Capito five Cephalus fluviatilis.

Gesner. pisc. 182.Chub, or Chevin. *Wil. Ictb.*255. *Raii syn. pisc.* 119.Cyprinus oblongus macrolepi-
dotus, pinna ani officulorum
undecim, *Arted. synon.* 7.Cyprinus cephalus. Cyp. pinna
ani radiis undecim, cauda
integra, corpore subcylin-
drico. *Lin. syst.* 527. *Gronov.*
Zooph. No. 339.Alte. *Meyer's An.* ii. tab. 92.Rapen. *Wulff. Boruss.* No. 56.

SALVIANUS imagines this fish to have been the *Squalus** of the antients, and grounds his opinion on a supposed error in a certain passage in *Columella* and *Varro*, where he would substitute the word *Squalus* instead of *Scarus*: *Columella* says no more than that the old *Romans* payed much attention to their stews, and kept even the sea fish in fresh water, paying as much respect to the *Mullet* and *Scarus* as those of his days did to the *Muræne* and *Bass*.

That the *Scarus* was not our *Chub*, is very evident; not only because the *Chub* is entirely an inhabitant of fresh waters, but likewise it seems improbable that the *Romans* would give themselves any trouble about the worst of river fish, when they neglected the most delicious kinds; all their attention was directed towards those of the sea: the difficulty of procuring them seems to have been the criterion of their value, as is ever the case with effete luxury.

* A cartilaginous fish, a shark. *Vide. Plin. lib. ix. c. 24. Ovid* also ranks his *Squalus* with the sea fish.

Et SQUALUS, et tenui suffusus sanguine MULLUS. Halieut. 147.

The chub is a very coarse fish and full of bones : it frequents the deep holes of rivers, and during summer commonly lies on the surface, beneath the shade of some tree or bush. It is a very timid fish, sinking to the bottom on the least alarm, even at the passing of a shadow, but they will soon resume their situation. It feeds on worms, caterpillars, grasshoppers, beetles, and other coleopterous insects that happen to fall into the water ; and it will even feed on cray-fish. It is the only fish of this genus that will rise to a fly.

This fish takes its name from its head, not only in our own, but in other languages ; we call it *Chub*, according to *Skinner*, from the old *English*, *Cop*, a head ; the *French*, *Testard* ; the *Italians*, *Capitone*.

It does not grow to a large size ; we have known some that weighed above five pounds, but *Salvianus* speaks of others that were eight or nine pounds in weight.

The body is oblong, rather round, and of a pretty equal thickness the greatest part of the way : the scales are large.

The irides silvery ; the cheeks of the same color : the head and back of a deep dusky green : the sides silvery, but in the summer yellow : the belly white : the pectoral fins of a pale yellow : the ventral and anal fins red : the tail a little forked, of a brownish hue, but tinged with blue at the end.

X. The B L E A K.

- | | |
|--|--------------------------------------|
| Alburnus. <i>Auson. Mosella.</i> 126. | ani officulorum viginti. <i>Ar-</i> |
| Able ou Ablette. <i>Belon.</i> 319. | <i>ted. synonym.</i> 10. |
| Alburnus. <i>Rondel. fluviat.</i> 208. | Cyprinus alburnus. <i>Lin. syst.</i> |
| <i>Gesner. pisc.</i> 23. | 531. <i>Gronov. Zooph.</i> No. 336. |
| Albula minor. Witinck, Witek | Loja. <i>Faun. suec.</i> No. 373. |
| and Blike. <i>Schonevelde.</i> ii. | Spitlauben, schneiderfischl. |
| <i>tab.</i> 1. | <i>Kram.</i> 395. |
| Bleak. <i>Wil. Ictb.</i> 263. <i>Raii syn.</i> | Ukeleyen. <i>Wulff. Boruss.</i> No. |
| <i>pisc.</i> 123. | 64. |
| Cyprinus quincuncialis, pinna | |

THE taking of these, *Ausonius* lets us know,
was the sport of children,

ALBURNOS prædam puerilibus hamis.

They are very common in many of our rivers, and keep together in large shoals. These fish seem at certain seasons to be affected with the vertigo; they tumble about near the surface of the water, and are incapable of swimming far from the place, but in about two hours recover, and disappear. Fish thus affected the *Thames* fishermen call *mad bleaks*.

Artificial pearls are made with the scales of this fish, and we think of the dace. They are beat into a fine powder, then diluted with water, and introduced into a thin glass bubble, which is afterwards filled with wax. The *French* were the inventors of this art. Doctor *Lister** tells us, that when he was at *Paris*, a certain artist used in one winter thirty hampers full of fish in this manufacture.

Artificial
pearls.

* Journey to *Paris*, 142.

Descr.

The bleak seldom exceeds five or six inches in length: their body is slender, greatly compressed sideways, not unlike that of the sprat.

The eyes are large: the irides of a pale yellow: the under jaw the longest: the lateral line crooked: the gills silvery: the back green: the sides and belly silvery: the fins pellucid: the scales fall off very easily: the tail much forked.

White
bait.

During the month of *July* those appear in the *Thames*, near *Blackwall* and *Greenwich*, innumerable multitudes of small fish, which are known to the *Londoners* by the name of *White Bait*. They are esteemed very delicious when fried with fine flour, and occasion, during the season, a vast resort of the lower order of epicures to the taverns contiguous to the places they are taken at.

There are various conjectures about this species, but all terminate in a supposition that they are the fry of some fish, but few agree to which kind they owe their origin. Some attribute it to the shad, others to the sprat, the smelt, and the bleak. That they neither belong to the shad, nor the sprat, is evident from the number of branchiostegous rays, which in those are eight, in this only three. That they are not the young of smelts is as clear, because they want the *pinna adiposa*, or rayless fin; and that they are not the offspring of the bleak is extremely probable, since we never heard of the white bait being found in any other river, notwithstanding the bleak is very common in several of the *British* streams: but as the white bait bears a greater similarity to this fish than to any other we have mentioned

tioned, we give it a place here as an appendage to the bleak, rather than form a distinct article of a fish which it is impossible to class with certainty.

It is evident that it is of the carp or *Cyprinus* genus: it has only three branchiostegous rays, and only one dorsal fin; and in respect to the form of the body is compressed like that of the bleak.

Its usual length is two inches: the under jaw is the longest: the irides silvery, the pupil black: the dorsal fin is placed nearer to the head than to the tail, and consists of about fourteen rays: the side line is strait: the tail forked, the tips black.

The head, sides, and belly are silvery; the back tinged with green.

XI. The M I N O W.

- Φοξινός? *Arist. Hist. an. vi. c. 13.* Pink, minim, or minow. *Wil. Ictb. 268. Raii syn. pisc. 125.*
 Le Veron. *Belon. 324.* Cyprinus tridactylus varius ob-
 Pisciculus varius. *Rondel. fluviat. 205.* longus teretiusculus, pinna
 ani officulorum octo. *Arted. synon. 12.*
 Phoscium qui vulgo veronus (quari varius) dicitur, *Belonius. Gesner pisc. 715.* Cyprinus Phoxinus. Cyp. pin-
 Elritze, Elderitze. *Schonevelde. 57.* na ani radiis 8. macula fusca
 ad caudam, corpore pellucido. *Lin. syst. 528.*

THIS beautiful fish is frequent in many of our small gravelly streams, where they keep in shoals.

The body is slender and smooth, the scales being extremely small. It seldom exceeds three inches in length.

Descr.

The lateral line is of a golden color: the back flat, and of a deep olive: the sides and belly vary greatly in different fish; in a few are of a rich crimson, in others bluish, in others white. The tail is forked, and marked near the base with a dusky spot.

XII. The

XII. The G O L D F I S H.

Kingo, the Gold Fish. *Kæmpfer Hist. Japan.* I. 137.

Kin-yu. *Du Halde Hist. China.* I. 19. 315.

Cyprinus auratus. Cyp. pinna
ani gemina, cauda transversa.

bifurca. *Lin. syst.* 527. *Faun.*
suec. tab. 2. *Gronov. Zooph.*

No. 342.

Gold Fish. *Edw.* 209.

Kin-yu, five *carpio auratus.*
Baster. subsec. II. 78.

THESE fish are now quite naturalized in this country, and breed as freely in the open waters as the common carp.

They were first introduced into *England* about the year 1691, but were not generally known till 1728, when a great number were brought over, and presented first to Sir *Mathew Dekker*, and by him circulated round the neighborhood of *London*, from whence they have been distributed to most parts of the country.

In *China* the most beautiful kinds are taken in a small lake in the province of *Che-Kyang*. Every person of fashion keeps them for amusement, either in porcellane vessels, or in the small basons that decorate the courts of the *Chinese* houses. The beauty of their colors, and their lively motions, give great entertainment, especially to the ladies, whose pleasures, by reason of the cruel policy of that country, are extremely limited.

In form of the body they bear a great resemblance to a carp. They have been known in this island to arrive at the length of eight inches; in their

Deser.

their native place they are said* to grow to the size of our largest herring.

The nostrils are tubular, and form sort of appendages above the nose: the dorsal fin and the tail vary greatly in shape: the tail is naturally bifid, but in many is trifid, and in some even quadrifid: the anal fins are the strongest characters of this species, being placed not behind one another like those of other fish, but opposite each other like the ventral fins.

The colors vary greatly; some are marked with a fine blue, with brown, with bright silver; but the general and predominant color is gold of a most amazing splendor; but their colors and form need not be dwelt on, since those who want opportunity of seeing the living fish, may survey them expressed in the most animated manner, in the works of our ingenious and honest friend Mr. *George Edwards*.

* *Du Halde*, 316.

APPENDIX.

Tortoise, page 1. The late Bishop of *Carlisle* informed me that a tortoise was taken off the coast of *Scarborough* in 1748 or 1749. It was purchased by a family at that time there, and a good deal of company invited to partake of it. A gentleman, who was one of the guests, told them it was a *Mediterranean* turtle, and not wholesome: only one of the company eat of it, and it almost killed him, being seized with a dreadful vomiting and purging.

Toad, 7. Since the printing of that article I have been favored with some very curious accounts of this reptile, which will give greater light into its natural history than I am capable of, from a most unphilosophical but invincible aversion to the whole genus. The facts that will appear in the following lines serve to confirm my opinion of its being an innoxious animal, and, I hope, will serve to free numbers from a panic that is carried to a degree of infelicity,

city, and also to redeem it from a persecution which the unmerited ill-opinion the world has conceived, perpetually exposes it to.

The gentlemen I am principally indebted to for my informations are *J. Arscott*, Esq; of *Tebott*, in *Devonshire*, and *Mr. Pitfield*, of *Exeter*. Some of these accounts were addressed to *Doctor Milles*, Dean of *Exeter*; others to the worthy Prelate abovementioned, to whom I owe these and many other agreeable correspondencies; others again to myself.

Mr. Arscott's letters give a very ample history of the nature of the toad: they were both addressed to *Doctor Milles*, and both were the result of certain queries I proposed, which the former was so obliging as to give himself the trouble of answering in a most satisfactory manner.

I shall first take the liberty of citing *Mr. Arscott's* letter of *September* the 23d, 1768, which mentions some very curious particulars of this innocent reptile, which, for such a number of years found an asylum, from the good sense of a family

family which soared above all vulgar prejudices.

“ It would give me the greatest
“ pleasure to be able to inform you
“ of any particulars worthy Mr.
“ *Pennant*’s notice, concerning the
“ toad who lived so many years
“ with us, and was so great a favorite.
“ The greatest curiosity in
“ it was its becoming so remarkably tame. It had frequented
“ some steps before the hall-door
“ some years before my acquaintance commenced with it, and
“ had been admired by my father
“ for its size (which was of the
“ largest I ever met with) who
“ constantly payed it a visit every
“ evening. I knew it myself
“ above thirty years, and by constantly feeding it, brought it to
“ be so tame that it always came
“ to the candle, and looked up as
“ if expecting to be taken up and
“ brought upon the table, where I
“ always fed it with insects of all
“ sorts : it was fondest of flesh
“ maggots, which I kept in bran ;
“ it would follow them, and when
“ within a proper distance, would
“ fix its eye, and remain motionless for near a quarter of a minute,
“ nute,

“ nute, as if preparing for the
 “ stroke, which was an instantane-
 “ ous throwing its tongue at a
 “ great distance upon the insect,
 “ which stuck to the tip by a glutin-
 “ ous matter: the motion is quick-
 “ er than the eye can follow*.

“ I always imagined that the root
 “ of its tongue was placed in the
 “ fore part of its under jaw, and
 “ the tip towards its throat, by
 “ which the motion must be a half
 “ circle; by which, when its tongue
 “ recovered its situation, the insect
 “ at the tip would be brought to
 “ the place of deglutition. I was
 “ confirmed in this by never ob-
 “ serving any internal motion in its
 “ mouth, excepting one swallow the
 “ instant its tongue returned. Pos-
 “ sibly I might be mistaken, for I
 “ never dissected one, but contented
 “ myself with opening its mouth,
 “ and slightly inspecting it.

“ You may imagine that a toad
 “ generally detested (altho' one of
 “ the most inoffensive of all ani-
 “ mals) so much taken notice of
 “ and befriended, excited the cu-

* This rapid capture of its prey might give occasion to the report of its fascinating powers. *Linnaeus* says, *Insecta in fauces fascino revocat.*

“ riosity of all comers to the house,
“ who all desired to see it fed, so
“ that even ladies so far conquered
“ the horrors instilled into them by
“ nurses, as to desire to see it.
“ This produced innumerable and
“ improbable reports, making it
“ as large as the crown of a hat,
“ &c. &c. This I hope will ac-
“ count for my not giving you par-
“ ticulars more worth your notice.
“ When I first read the account in
“ the papers of toads sucking can-
“ cerous breasts, I did not believe
“ a word of it, not thinking it pos-
“ sible for them to suck, having
“ no lips to embrace the part, and
“ a tongue so oddly formed; but as
“ the fact is thoroughly verified, I
“ most impatiently long to be fully
“ informed of all particulars re-
“ lating to it.”

Notwithstanding these accounts will serve to point out some errors I had adopted, in respect to this reptile in my first sheet, yet it is with much pleasure I lay before the public a more authentic history, collected from Mr. *Arscott's* second favor; the answer points out my queries, which it is needless to repeat.

Tehott,

Tebott, Nov. 1, 1768.

“ In respect to the queries I shall
“ here give the most satisfactory
“ answers I am capable of.

“ First, I cannot say how long
“ my father had been acquainted
“ with the toad before I knew it ;
“ but when I first was acquainted
“ with it, he used to mention it as
“ the old toad I’ve known so many
“ years ; I can answer for thirty-
“ six years.

“ Secondly, No toads that I ever
“ saw appeared in the winter sea-
“ son. The old toad made its ap-
“ pearance as soon as the warm wea-
“ ther came, and I always concluded
“ it retired to some dry bank to
“ repose till the spring. When we
“ new-lay’d the steps I had two
“ holes made in the third step on
“ each, with a hollow of more than
“ a yard long for it, in which I
“ imagine it slept, as it came from
“ thence at its first appearance.

“ Thirdly, It was seldom pro-
“ voked: neither that toad (nor the
“ multitudes I have seen tormented
“ with great cruelty) ever shewed
“ the least desire of revenge, by
“ spitting or emitting any juice
“ from their pimples. Sometimes
“ upon

“ upon taking it up it would let out
“ a great quantity of clear water,
“ which, as I have often seen it do the
“ same upon the steps when quite
“ quiet, was certainly its urine, and
“ no more than a natural evacuation.

“ Fourthly, A toad has no particu-
“ lar enmity for the spider; he used
“ to eat five or six with his millepides
“ (which I take to be its chief food)
“ that I generally provided for it, be-
“ fore I found out that flesh maggots,
“ by their continual motion, was the
“ most tempting bait; but when of-
“ fered it eat blowing flies and hum-
“ ble bees that come from the rat-
“ tailed maggot in gutters, or in short
“ any insect that moved. I imagine if
“ a bee was to be put before a toad,
“ it would certainly eat it to its cost;
“ but as bees are seldom stirring at
“ the same time that toads are, they
“ can seldom come in their way, as
“ they seldom appear after sun-rising,
“ or before sun-set. In the heat of the
“ day they will come to the mouth of
“ their hole, I believe, for air. I once
“ from my parlour window observed
“ a large toad I had in the bank of
“ a bowling-green, about twelve at
“ noon, a very hot day, very busy and
“ active upon the grafs; so uncom-

“ mon an appearance made me go out
 “ to see what it was, when I found an
 “ innumerable swarm of winged ants
 “ had dropped round his hole, which
 “ temptation was as irresistible as a
 “ turtle would be to a luxurious al-
 “ derman.

“ Fifthly, Whether our toad ever
 “ propagated its species I know not,
 “ rather think not, as it always ap-
 “ peared well, and not lessened in
 “ bulk, which it must have done, I
 “ should think, if it had discharged
 “ so large a quantity of spawn as toads
 “ generally do. The females that are to
 “ propagate in the spring, I imagine,
 “ instead of retiring to dry holes, go
 “ into the bottom of ponds, and lay
 “ torpid amongst the weeds ; for to
 “ my great surprize in the middle of
 “ the winter, having for amusement
 “ put a long pole into my pond, and
 “ twisted it till it had gathered a large
 “ volume of weed, on taking it off I
 “ found many toads, and having cut
 “ some asunder with my knife, by ac-
 “ cident, to get off the weed, found
 “ them full of spawn not thoroughly
 “ formed. I am not positive, but
 “ think there were a few males in
 “ *March* : I know there are thirty
 “ males

“ males* to one female, twelve or
 “ fourteen of whom I have seen cling-
 “ ing round a female : I have often
 “ disengaged her, and put her into a
 “ solitary male, to see with what eager-
 “ nefs he would feize her. They im-
 “ pregnate the spawn as it is drawn
 “ ** out in long strings, like a neck-
 “ lace,

* Mr. *John Hunter* has assured me that during his residence at *Belleisle*, he dissected some hundreds of toads, yet never met with a single female among them.

** I was incredulous as to the *obstetrical* offices of the male toad, but since the end is so well accounted for, and the fact established by such good authority, belief must take place.

Mr. *Demours*, in the *Memoirs of the French Academy*, as translated by Dr. *Templeman*, vol. I. 371. has been very particular in respect to the male toad, as acting the part of an *Accoucheur*; his account is curious, and claims a place here :

“ In the evening of one of the long days in summer, Mr.
 “ *Demours* being in the king's garden perceived two toads cou-
 “ pled together at the edge of an hole, which was formed in part
 “ by a great stone at the top.

“ Curiosity drew him to see what was the occasion of the mo-
 “ tions he observed, when two facts equally new surprized him ;
 “ the first was the extreme difficulty the female had in laying
 “ her eggs, insomuch that she did not seem capable of being
 “ delivered of them without some assistance. The second was,
 “ that the male was mounted on the back of the female, and
 “ exerted all his strength with his hinder feet in pulling out the
 “ eggs, whilst his fore-feet embraced her breast.

“ In order to apprehend the manner of his working in the
 “ delivery of the female, the reader must observe that the paws
 “ of these animals, as well those of the fore-feet as of the hin-
 “ der, are divided into several toes, which can perform the
 “ office of fingers.

“ It must be remarked likewise, that the eggs of this species
 “ of toads are included each in a membranous coat that is very
 “ firm, in which is contained the embryo ; and that these eggs,
 “ which are oblong and about two lines in length, being fasten-
 “ ed one to another by a short but very strong cord form a kind
 “ of chaplet, the beads of which are distant from each other

“ lace, many yards long, not in a large
 “ quantity of jelly, like frogs spawn.
 “ N. B. After having held a female
 “ some time in my hand, I have, to
 “ try if there was any smell, put my
 “ finger a foot under water to a male,
 “ who has immediately seized it, and
 “ stuck to as firmly as if it was a fe-
 “ male. *Quere*, Would they seize a
 “ finger or rag that had touched a
 “ cancerous ulcer?
 “ Sixthly, Insects being their food,
 “ I never saw any toad shew any lik-
 “ ing or dislike to any plant*.
 “ Seventhly, I hardly remember
 “ any persons taking it up except

“ about the half of their length. It is by drawing this cord
 “ with his paw that the male performs the function of a mid-
 “ wife, and acquits himself in it with a dexterity that one would
 “ not expect from so lumpish an animal.

“ The presence of the observer did not a little discompose
 “ the male; for some time he stopped short, and threw on the
 “ *curious impertinent* a fixed look that marked his disquietness and
 “ fear; but he soon returned to his work with more precipita-
 “ tion than before, and a moment *after* he appeared undetermi-
 “ ned whether he should continue it or not. The female like-
 “ wise discovered her uneasiness at the sight of the stranger, by
 “ motions that interrupted sometimes the male in his operation.
 “ At length, whether the silence and steady posture of the spec-
 “ tator had dissipated their fear, or that the *case* was urgent, the
 “ male resumed his work with the same vigour, and success-
 “ fully performed his function.”

* This question arose from an assertion of *Linnaeus*, that the
 toad delighted in filthy herbs. *Delectatur Cotula, Actæa, Stachyde*
fætidis. The unhappy deformity of the animal seems to be the
 only ground of this as well as another misrepresentation, of its
 conveying a poison from its pimples, its touch, and even its
 breath. *Verrucae ladescentes venenatae infusæ tactu, anhelitu*.

“ my

“ my father and myself: I do not
 “ know whether it had any particular
 “ attachment to us.

“ Eighthly, In respect to its end, I
 “ answer this last quere. Had it not
 “ been for a tame raven, I make no
 “ doubt but it would have been now
 “ living; who one day seeing it at
 “ the mouth of its hole, pulled it out,
 “ and although I rescued it, pulled
 “ out one eye, and hurt it so, that
 “ notwithstanding its living a twelve-
 “ month it never enjoyed itself, and
 “ had a difficulty of taking its food,
 “ missing the mark for want of its
 “ eye: before that accident had all
 “ the appearance of perfect health.”

What Mr. *Pitfield* communicated to me serves farther to evince the patient and pacific disposition of this poor animal. If I am thought to dwell too long on the subject, let it be considered, that those who have most unprovoked enemies, and fewest friends, clame the greatest pity, and warmest vindication. This reptile has undergone all sorts of scandal; one author makes it the companion of an atheist*; and *Milton* ** makes the devil itself

* A great toad was said to have been found in the lodgings of *Vanini*, at *Toulouse*. Vide. *Johnson's Shakespear*.

** *Paradise lost*.

its inmate; in a word, all kind of evil passions have been bestowed on it: It is but justice therefore to say something in behalf of an animal that has of late had so many tryals of its temper, from experiments occasioned by the new discovery of its cancer-fucking qualities. It has born all the handling, teizing, bagging, &c. &c. without the least sign of a vindictive disposition; but has even made itself a sacrifice to the discharge of its office: this I know from the result of much enquiry; would I could contradict what is asserted, p. 10, of the inefficacy of the tryals made of them in the most horrible of diseases; for at this time I myself cannot bring one proof of the success. But I would not have any one discouraged from the pursuit of the remedy. Heaven opens to us gradually its favors: the *loadstone* was for ages a meer matter of ignorant amaze at its attractive qualities: *mercury* was a supposed poison, and the terror of physicians: we now wonder at the powers of electricity, and are still but partially acquainted with its uses: the toad, the object of horror even in the most enlightened times, is found to be perfectly innocent; it has certainly contributed to the ease (and as has been said to the cure)

cure) of the unhappy cancered; let the following facts speak for themselves; they come from persons of undoubted veracity, and will sufficiently establish the truth of the beneficent qualities of this animal.

The first paper relating to it is very ingeniously drawn up by Mr. *Pitfield*, for the information of Doctor *Littleton*, Bishop of *Carlisle*, (now happy) who immediately honored me with the copy.

Exon, Aug. 29, 1768.

“ Your lordship must have taken
 “ notice of a paragraph in the papers,
 “ with regard to the application of
 “ toads to a cancered breast. A pa-
 “ tient of mine has sent to the neigh-
 “ borhood of *Hungerford*, and brought
 “ down the very woman on whom the
 “ cure was done. I have, with all
 “ the attention I am capable of, at-
 “ tended the operation for eighteen or
 “ twenty days, and am surprized at
 “ the phænomenon. I am in no ex-
 “ pectation of any great service from
 “ the application: the age, constitu-
 “ tion, and thoroughly cancerous con-
 “ dition of the person, being uncon-
 “ querable barriers to it. How an
 “ ail of that kind, absolutely local, in
 “ an otherwise sound habit, and of a
 “ likely

likely age, might be relieved, I cannot say. But as to the operation, thus much I can assert, that there is neither pain nor nausea in it. The animal is put into a linen bag, all but its head, and that is held to the part. It has generally instantly laid hold of the foulest part of the fore, and sucked with greediness until it dropped off dead. It has frequently happened that the creature has swollen immensely, and from its agonies appeared to be in great pain. I have weighed them for several days together, before and after the application, and found their increase of weight, in the different degrees, from a drachm to near an ounce. They frequently sweat exceedingly, and turn quite pale: sometimes they disgorge, recover, and become lively again. I think the whole scene is surprising, and a very remarkable piece of natural history. From the constant insensiveness which I have observed in them, I almost question the truth of their poisonous spitting. Many people here expect no great good from the application of toads to cancers; and where the disorder is not absolutely local, none is to be expected; where

“ where it is, and seated in any part,
 “ not to be well come at for extirpa-
 “ tion, I think it is hardly to be ima-
 “ gined, but that the having it sucked
 “ clean as often as you please, must
 “ give great relief. Every body
 “ knows, that dogs licking of sores
 “ cures them, which is, I suppose,
 “ chiefly by keeping them clean. If
 “ there is any credit to be given to
 “ history, poisons have been sucked
 “ out,

----- *Pallentia Vulnera lambit*
Ore Venena trahens.

“ are the words of *Lucan* on the oc-
 “ casion: if the people to whom these
 “ words are applied, did their cure by
 “ immediately following the injection
 “ of the poison, the local confinement
 “ of another poison brings the case to
 “ a great degree of similarity.

“ I hope I have not tired your lord-
 “ ship with my long tale, as it is a true
 “ one, and in my apprehension a curi-
 “ ous piece of natural history, I could
 “ not forbear communicating it to you.
 “ I own I thought the story in the pa-
 “ pers to be an invention, and when I
 “ considered

“ considered the instinctive principle
 “ in all animals of self preservation,
 “ I was confirmed in my disbelief; but
 “ what I have related I saw, and all
 “ theory must yield to fact. It is only
 “ the *Rubeta*, the land toad, which
 “ has the property of sucking; I can-
 “ not find any the least mention of
 “ the property in any one of the old
 “ naturalists. My patient can bear to
 “ have but one applied in twenty-four
 “ hours: the woman who was cured
 “ had them on day and night, with-
 “ out intermission, for five weeks.
 “ Their time of hanging at the breast
 “ has been from one to six hours.”

The other account is of a woman
 now under the experiment, which I
 give, as delivered to me from un-
 doubted authority. If the event is
 prosperous, an early opportunity shall
 be taken of informing the public of it
 in some of the news-papers, with all
 circumstances of place, name, &c.
 which at present it is needless to men-
 tion.

About six years ago a poor woman
 received a crush on her breast by the
 fall of a pail; a cancerous complaint
 was the result.

Last

Last year her disorder increased to an alarming degree; she had five wounds on her breasts, one exceeding large, from which fragments of bone worked out, giving her vast pain; and at the same time there was a great discharge of thin yellow matter: she was likewise reduced to a meer skeleton.

All her left side and stomach was much swelled; her fingers doughy and discolored.

On the 25th of *September*, 1768, the first toad was applied; between that and the 29th she used seven, and had that night better rest. She swallowed with greater ease, for before that time there was some appearance of humor in her neck, and a difficulty of getting any thing down.

October 16th, the patient better. It was thought proper as winter was coming on, and of course it would be very difficult to procure a number of toads, to apply more at a time, so three were put on at once. The swelling in the arm abated, and the woman's rest was good.

During these tryals she took an infusion of *Water Parsnep* with *Pulvis Cornacchini*.

December

December 18th, continued to look ill, but finds herself better: two of the wounds were now healed.

She was always most easy when the toads were sucking, of which she killed vast numbers in the operation.

January 1769. The last account that was received, informing that the patient was better.

The remarks made on the animals, are these:

Some toads died very soon after they had sucked; others lived about a quarter of an hour, but some lived much longer: for example, one that was applied about seven o'clock sucked till ten, and died as soon as it was taken from the breast; another that immediately succeeded continued till three o'clock, but dropped dead from the wound, each swelled exceedingly, and turned of a pale color.

These toads did not seem to suck greedily, and would often turn their heads away; but during the time of sucking were heard to smack their lips like a young child.

As those reptiles are apt by their struggles to get out of the bag, the open end ought to be made with an open hem, that the string may run the
more

more readily, and fasten tightly about the neck.

It would be improper to quit the subject without mentioning the origin of this strange discovery, which was owing to a woman near *Hungerford*, who labored under a cancerous complaint in her breast, which had long baffled all applications.

The account she gives of the manner in which she came by her knowledge is very singular, and I may say apocryphal. She says of herself, that in the height of her disorder she went to some church where there was a vast crowd: on going into a pew, she was accosted by a strange clergyman, who, after expressing compassion for her situation, told her that if she would make such an application of living toads* as abovementioned, she would be well.

This dark story is all we can collect relating to the affair. It is our opinion that she stumbled upon the discovery by accident, and that having set up for a cancer doctress, she thought it necessary to amuse the world with

* I have been told that she not only made use of living toads, but permitted the dead ones to remain at her breast, by way of cataplasms, for some weeks.

this mysterious relation *. For it seems very unaccountable, that this unknown gentleman should express so much tenderness for this single sufferer, and not feel any for the many thousands that daily languish under this terrible disorder: would he not have made use of this invaluable nostrum for his own emolument, or at least, by some other means have found a method of making it public for the good of mankind.

Here I take leave of the subject, which I could not do without expressing my doubts, as to the method of the woman's obtaining her information; but in respect to the authenticity of this new-discovered property of the toad, facts establish it beyond dispute. Let the humane wish for speedy proofs of the efficacy; and for the satisfaction of the world, let those who are capable of giving indisputable proofs of the success, take the earliest opportunity of making the public acquainted with so interesting an affair.

* Mr. *Valentine Greatraks*, who about the year 1664, persuaded himself that he could cure diseases, by stroking them out of the parts affected with his hand; and the famous *Bridget Bostock*, of *Cheshire*, who worked cures by virtue of her fasting spittle, both came by their art in a manner supernatural, but by faith many were made whole.

Viper, 21. *Keyser*, vol. III. 237, relates, that Sir *Kenelm Digby* used to feed his wife, who was a most beautiful woman, with capons fattened with the flesh of vipers.

The traveller does not quote his authority; but the lady did not long survive this strange regimen.

Blind worm, 26. In *Sueden* is a small reddish serpent, called there the *Asping*, the *Coluber Cbersea*, of *Linnaeus*: it is small, and of a reddish color, and its bite is said to be mortal.

May it not have been from a serpent of this species, that the man in *Oxfordshire* received his death?

Glain Neidr, 23. This reminds me of another *Welsh* word that is explanatory of the customs of the antients, shewing their intent in the use of the plant *Vervaine* in their lustrations; and why it was called by *Dioscorides* *Hierobotane*, or the sacred plant, and esteemed proper to be hung up in their rooms.

The *British* name *Cas gan Cythrawl*, or the Devil's aversion, may be a modern appellation, but is likewise called *X Dderwen fendigaid*, the holy oak, which evidently refers to the *Druids* groves.

Pliny

Pliny informs us, that the *Gauls* used it in their incantations, as the *Romans* and *Greeks* did in their lustrations. *Terence*, in his *Andria*, shews us the *Verbena* was placed on altars before the doors of private houses in *Athens*; and from the same passage in *Pliny* *, we find the *Magi* were guilty of the most extravagant superstition about this herb. Strange it is that such a veneration should arise for a plant endued with no perceptible qualities; and stranger still it should spread from the farthest north to the boundaries of *India*. So general a consent, however, proves the custom arose before the different nations had lost all communication with each other.

Basking Shark, This species, on comparing a rude sketch of one taken in the *Caernarvonshire* seas, with an engraving of the *Squalus Maximus* in *Bishop Gunner's Acta Nidrosiana*, we find them to be the same, and that it has a small anal fin, which probably was overlooked by the *Welsh* fishermen.

Sturgeon, 96. The mouth of the sturgeon when dead is always open; when alive it can

* *Lib. xxv. cap. 9.*

close or open it at pleasure, by means of certain muscles, which also assist it in protruding or drawing it in. *Pliny* speaking of his *Acipenser*, makes it synonymous with the *Elops*, *Quidam eum ELOPEM vocant.*

Ballan.

This is a kind of *Wrasse**, sent from *Scarborough* by *Mr. Travis*, differing from the other species. They appear during summer in great shoals off *Filey-Bridge*: the largest weigh about five pounds.

It was of the form of the common *wrasse*, only between the dorsal fin and the tail was a considerable sinking: above the nose was a deep fulcus: on the farthest cover of the gills was a depression radiated from the center.

It had only four branchiostegous rays.

The dorsal fin had thirty-one rays, twenty spiny, eleven soft; the last branched, and much longer than the spiny rays.

The pectoral fins had fourteen; the ventral six; the first of which was short and spiny: the anal twelve; the three first spiny, the nine others branched and soft.

* *Vide p. 203.*

The tail was rounded at the end; at the bottom, for about a third part of the way, between each ray was a row of scales.

The color in general was yellow, spotted with orange.

The plate of this fish is placed at p. 204.

Fœcundi-
ty of fish,
p. 302.

Fish.	Weight.		Weight of spawn.	Fœcundity.	Time.
	oz.	dr.	grains.		
Carp	25	5	2571	203109	April 4.
Codfish			12540	3686760	Dec. 23.
Flounder	24	4	2200	1357400	March 14.
Herring	5	10	480	36960	Oct. 25.
Mackrel	18	0	1223 $\frac{1}{2}$	546681	June 18.
Perch	8	9	765 $\frac{1}{2}$	28323	April 5.
Pike	56	4	5100 $\frac{1}{2}$	49304	April 25.
Roach	10	6 $\frac{1}{2}$	361	81586	May 2.
Smelt	2	0	149 $\frac{1}{2}$	38278	March 21.
Sole	14	8	542 $\frac{1}{2}$	100362	June 13.
Tench	40	0		383252*	May 28.

* Some part of the spawn of this fish was by accident lost, so that the account here is below the reality. *Vide Phil. Trans.* 1767.

C A T A L O G U E

O F T H E

Animals described in this Volume.

With their BRITISH Names.

R E P T I L E S.

- | | |
|---------------------------------|-------------------------------------|
| 1 SPINOUS Tortoise, | Melwioges. |
| 2 Common Frog, | Llyffant melyn. |
| 3 Gibbous Frog, | Llyffant melyn cefn
grwm. |
| 4 Toad, | Llyffant du, Llyffant
dafadenog. |
| 5 Natter Jack, | |
| 6 Scaly Lizard, | |
| 7 Warty Lizard, | Genau goeg ddafadenog. |
| 8 Brown Lizard, | frech. |
| 9 Little Brown Lizard, | leiaf. |
| 10 Snake-shaped Lizard, | naredig. |
| 11 Viper, | Neidr, Neidr du, Gwiber |
| 12 Snake, | Neidr fraith, Neidr y
tomenyd. |
| 13 Blindworm, or Slow-
worm, | Pwl dall. |

It is to *Richard Morris*, Esq; that the public is indebted for the *British* names.

F I S H.

- | | | |
|----|-----------------------|---------------------------------|
| 14 | C ommon Whale, | Morfil Cyffredin. |
| 15 | Pike-headed Whale, | Penhwyad. |
| 16 | Fin-fish, | Barfog. |
| 17 | Round-lipped Whale, | Trwngrwn. |
| 18 | Beaked Whale, | |
| 19 | Blunt-headed Cachalot | |
| 20 | Great-headed | Penfawr. |
| 21 | Round-headed | Pengrwn. |
| 22 | High-finned | Uchel aden. |
| 23 | Dolphin, | Dolffyn. |
| 24 | Grampus, | Morhwch, Morfochyn. |
| 25 | Porpesse, | Llamhydydd. |
| 26 | Lamprey, | Llysowen bendol, Llam-
prai. |
| 27 | Leffer Lamprey, | Lleprog. |
| 28 | Pride, | |
| 29 | Skate, | Cath fôr, morcath,
Rhaien. |
| 30 | Sharp-nosed Ray, | Morcath drwynfain. |
| 31 | Rough Ray, | |
| 32 | Cramp Ray, | Swithbyfg. |
| 33 | Thornback, | Morcath bigog. |
| 34 | Sting Ray, | Morcath cefn. |
| 35 | Angel-fish, | Maelgi. |
| 36 | Picked Dog-fish, | Ci Pegod, Picewd. |
| 37 | Basking Shark, | |
| 38 | White Shark, | Morgi gwin. |
| 39 | Blue Shark, | Morgi glas, y Sierc. |

40 Sea Fox,	Llwynog mor.
41 Tope,	Ci glas.
42 Greater Dog-fish,	Ci ysgarmes, morgi mawr
43 Lesser Dog-fish,	
44 Smooth Hound,	Ci Llyfn.
45 Porbeagle,	
46 Common Fishing Frog,	Morlyffant, Llyffanbysg.
47 Long Fishing Frog,	Morlyffant hir.
48 Sturgeon,	Istwrion.
49 Oblong Sun-fish,	Heulbysg.
50 Short Sun-fish,	
51 Lump-fish,	Jar-fôr.
52 Sea Snail,	Môr falwen.
53 Longer Pipe-fish,	
54 Shorter	
55 Little or Sea Adder,	Mor Neidr.
56 Eel,	Llyfowen.
57 Conger,	Mor Llyfowen, Cyngyren
58 Sea Wolf,	Morflaid.
59 Sand Eel,	Llamrhiaid, Pysgod by- chain.
60 Morris,	Morys.
61 Sword-fish,	Cleddytbysg.
62 Dragonet,	
63 Lesser Dragonet,	
64 Weever,	Mor wiber, Pigyn astrus.
65 Lesser Weever,	
66 Common Codfish,	Codfyn.
67 Torsk,	
68 Hadock,	Hadoc.

69 Whiting Pout,	Cod lwyd.
70 Bib,	Deillion.
71 Poor,	Cwdyn ebrill.
72 Coal-fish,	Chwetlyn glas.
73 Pollack,	Morlas.
74 Whiting,	Chwitlyn gwyn.
75 Hake,	Cegddu.
76 Lesser Hake,	
77 Left Hake,	
78 Ling,	Honos.
79 Burbot,	Llefen, Llefenan.
80 Spotted Whistle-fish,	
81 Brown Whistle-fish,	
82 Crested Blenny,	
83 Gattorugine,	
84 Smooth Blenny,	
85 Spotted Blenny,	
86 Viviparous Blenny,	
87 Black Goby,	
88 Spotted Goby,	
89 Bull Head,	Pentarw, Bawd y meli- nydd.
90 Pogge,	Penbwl.
91 Father Lasher,	
92 Doree,	Sion dori.
93 Holibut,	Lleden ffreinig.
94 Whiff,	
95 Plaife,	Lleden frech.
96 Flounder,	Lleden 'ddu.
97 Dab,	Lleden gennog, Lleden dwfr croyw.
98 Smear Dab,	
	99 Sole,

99 Sole,	Tafod yr hydd, Tafod yr ych.
100 Smooth Sole,	
101 Turbot,	Lleden chwith, Torbwt.
102 Pearl,	Perl.
103 Gilt Head,	Peneŷryn, Eurben.
104 Sea Bream,	Brôm y môr.
105 Lesser Sea Bream,	
106 Opah,	
107 Wraŷŷe,	Gwrach.
108 Bimaculated	
109 Trimaculated	
110 Striped	
111 Gibbous	
112 Goldfinny,	
113 Comber.	
114 Cook,	
115 Ballan,	
116 Perch,	Perc.
117 Baŷŷe,	Draenog, Gannog.
118 Ruŷŷe,	
119 Black Ruŷŷe,	
120 Threespined Stickle- back,	Sil y dom, Pyŷgod y gath.
121 Ten spined	Pigowgbyŷg.
122 Fifteen spined	Silod y môr.
123 Mackrel,	Macrell.
124 Tunny,	Macrell Sopaen.
125 Scad,	
126 Red Surmullet,	Hyrddyn coch.
127 Striped	
	128 Grey

128 Grey Gurnard,	Penhaiarn llwyd, Pen- haiernyn.
129 Red Gurnard,	Penhaiarn coch.
130 Piper,	Pibyd.
131 Tub Fish,	Ysgyfarnog y môr.
132 Streaked Gurnard,	
133 Loche,	Crothell yr afon.
134 Salmon,	Gleifiedyn, Eog, Maran <i>Taliesin.</i>
135 Grey,	Penllwyd, Adfwlch.
136 Bull Trout,	
137 Trout,	Brithyll.
138 Samlet,	Brith y gro, Silod bri- thion.
139 Charr,	Torgoch.
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141 Smelt,	Brwyniaid.
142 Gwiniad,	Gwiniedyn.
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154 Carp,	Carp, Cerpyn.
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156 Tench,	Gwrachen, Isgretten.
157 Gudgeon,	Crothel,
158 Bream,	Brêm.
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160 Roach,	Rhyfell.
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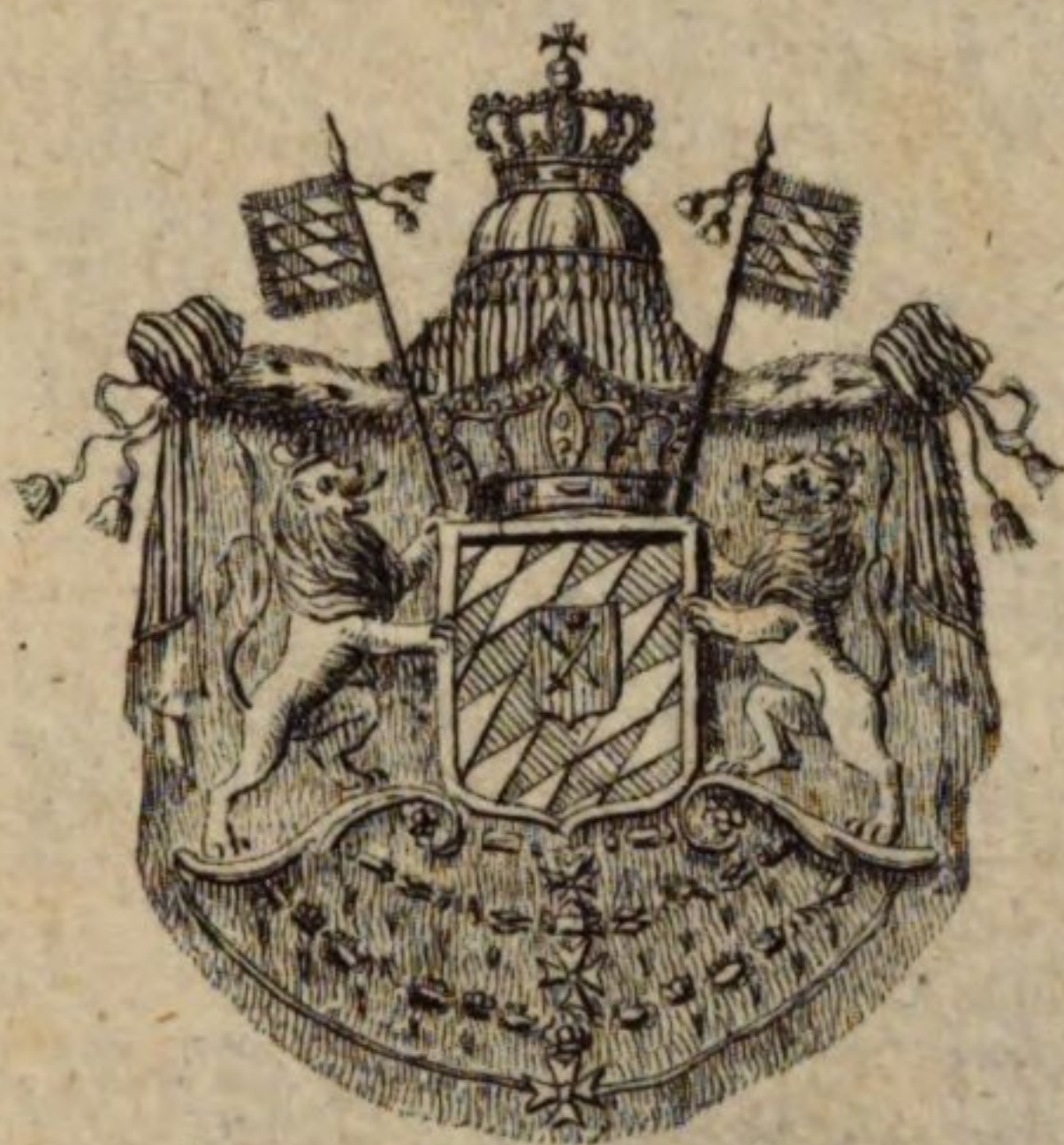
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